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FEDERAL POWER MARKETING PROBLEMS

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BEFORE THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

FIRST SESSION

ON

FEDERAL POWER MARKETING PROBLEMS

FEBRUARY 13, 14, 16, AND MARCH 5, 1959

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FEDERAL POWER MARKETING PROBLEMS

FRIDAY, FEBRUARY 13, 1959

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in room 3110, New Senate Office Building, Senator James E. Murray, chairman, presiding.

Present: Senators Murray (presiding), O'Mahoney, Carroll, Moss, Greuning, and Martin of Iowa.

Also present: Senators Mansfield, Langer, and Young; Benton J. Stong, professional staff member.

The CHAIRMAN. The hearing will come to order, please.

The hearings today—the first held in this new committee room—are for the purpose of permitting the REA cooperative and public power customers of the Department of the Interior to present their power supply problems to the Interior and Insular Affairs Committee of the Senate. Such hearings were originally suggested by Missouri Basin preference customers. There have also been requests to be heard from the Upper Colorado Basin and the Columbia Basin.

Since most of the witnesses had to be in Washington for the National Rural Electric Cooperative Association Convention this week, these hearings were set this weekend for their convenience. It is our hope that all of you may be heard during these hearings today, Saturday morning, and Monday morning.

We have asked Assistant Secretary of the Interior Fred G. Aandahl to appear before the committee on March 5 in relation to Missouri Basin power marketing problems. At that time, or at a later date, the committee will attempt to take up with him problems in other areas.

A tentative allocation of Missouri Basin power was made public last December by the Interior Department. It is apparent that the Missouri River, operated to the limit of its potential, cannot meet the growing power requirements of the upper basin for very long. We must make the fullest use of all waterpower available. We need to reexamine use of water for navigation. But I would like to recall that in 1957, when I opened hearings on Missouri Basin water problems, I made this statement:

> * * * a choice between two needs for water is not an adequate solution of the problems of the Missouri Basin. The real solution is finding ways to meet all of the needs of the basin, not merely one or another of them. With an integrated development of all of the resources of the Missouri Basin—including its vast lignite deposits, as well as flowing water for energy—all needs could be met.

It continues to be my hope that we can find constructive solutions to the Missouri Basin power and water problems, and to the problems of

all other areas of the United States, which will meet all the needs of our citizens and not just part of them.

Following our 1957 hearings, the Corps of Army Engineers wrote to our committee, in relation to slack water navigation in the lower basin:

> In view of the major physical and economic changes in the Missouri River Basin since prior studies of this type of improvement, it might be desirable to undertake an investigation of preliminary examination scope so that authoritative and up-to-date data on costs and benefits will be available.

I have called the attention of the chairman of the House Appropriations Committee to this recommendation from the Corps of Army Engineers, suggesting to him that the necessary funds be made available to the Engineers for such a preliminary study.

It is my hope that in these hearings we will be able to determine the needs for additional power-generating capacity in the upper Missouri Basin, the possibility of getting more firm power from the river, the desirability of constructing thermal plants in the lignite areas and of construction of additional hydroelectric projects in the upper basin, interconnected to serve customers anywhere in the Missouri Valley.

Before starting the hearings, Senator Young is here this morning and wishes to present some of his witnesses. Also, Senator Langer desires to introduce some of his witnesses.

Senator LANGER. I want to say, Mr. Chairman, that I am here to introduce the North Dakota delegation to you. I think it is one of the very best delegations that has ever come from the State of North Dakota. We have Mr. Anderson and Mr. Bergman, and some more here to testify. In addition to that, I want to present my own statement, a speech that I gave on the matter on the Senate floor on the 23d day of January 1958, a little over a year ago. I went into great detail. I ask permission to have this filed at this time, if I may.

The CHAIRMAN. Very well.

(The statement referred to follows:)

THE REA INTEREST RATE OF 2 PERCENT MUST NOT BE CHANGED

Statement of Hon. William Langer of North Dakota in the Senate of the United States, Thursday, January 23, 1958

Mr. LANGER. Mr. President, this morning I introduced two bills dealing with REA. I ask unanimous consent that a statement prepared in connection with the bills may be printed in the body of the Record following the introduction of the bills.

(There being no objection, the statement was ordered to be printed in the Record, as follows:)

I have asked for the floor because I want to speak up against the robbery of the American people. It is a robbery that has been going on for years, but I don't think we should let another day pass without doing something to stop it. I am referring to the practice of electric power companies in spending countless millions in propaganda advertising and political activities and then adding the costs of this propaganda to their cost of operation and making the consumer pay for it in his electric bill.

ELECTRIC POWER A MONOPOLY INDUSTRY

As everyone knows, the electric power industry is a monopoly industry. The man that wants electricity must buy it from the company that services his community and he must pay the rates which they charge. The consumer has absolutely no choice in the matter. Because of this monopoly position enjoyed by the electric power companies the law provides that they are allowed to charge

only such rates that will enable them to cover their costs of operation and their costs of obtaining the money that they need for that operation. Obviously, money spent to attack some public development, or to propagandize the consumer along certain political and economic lines, are not a cost of the operation of an electric power company.

The electric consumer wants, and is entitled to receive, the best possible electric service at the lowest possible cost. The electric consumers should not have to pay the cost of expensive advertisements, in slick national magazines, attacking TVA, or a Federal Hells Canyon project, or the rural electric cooperatives of the country. Expenditures of that kind do not contribute to any better or cheaper service for the consumer—on the contrary, all that they do is to increase his electric bill.

Can you imagine what the electric consumer would say if his electric light bills showed that 5 or 10 percent of it—or any amount of it, no matter what the percentage—was being charged him because his electric power company wanted to feed him propaganda against rural electric cooperatives? Or because they wanted to lobby against Hells Canyon? Can you imagine what would happen if your electric bill read: "$10 for electricity, $1 to finance propaganda by the company to make you think TVA is socialistic." I don't have to tell you that overnight there would be such a howl of protest that either the electric power companies would stop that practice immediately, or something would be done to make them stop it. The only reason that the electric consumers all over the country are not raising their voices in protest—the only reason they are not knocking at our doors and filling our offices—is that they don't know what is going on. They are being taken and taken badly, but they don't know it.

But you and I know it, and the public utility commissions of the country know it. What possible excuse do we have for allowing this robbery to continue? I tell you that I am going to speak up against it at every possible opportunity and I am not going to let up this fight until this outrageous practice is stopped.

MISLEADING ADVERTISING

Now, back in the 1920's the National Electric Light Association tried to control public opinion through its propaganda advertising and political activities. And of course, at the same time they were charging the costs of this public opinion control to the electric consumer himself in his electric bill. These practices became so outrageous that they were investigated and exposed by the Federal Trade Commission, and for a while conditions improved. Some of the more naive thought perhaps the practice had been licked and that the electric power companies would not again try to brainwash their customers at their customers' expense, but apparently it takes a lot more than that to keep the electric power companies in line. Actually, for the last 15 years these old practices and abuses have been renewed and once again the electric consumer has had to foot the bill for his misinformation. The electric power companies of the country have spent and are spending millions of dollars of their customers' money in this attempt to mislead and control the thinking of their customers. They have tried and are trying to brainwash them at their own expense.

There are four major organizations through which the electric power companies are carrying on this brainwashing campaign. There is the Edison Electric Institute, which prepares the statistical ammunition and cooperates with educational institutions in the preparation of literature. Then there is the electric companies' advertising program, which hands out advertising to magazines and newspapers, sponsors weekly radio and television programs, and provides its member companies with the material for them to use locally. Then there is the electric companies' public information program, which provides material for use in speeches, and by the local press and employee publications. Finally, there is the National Association of Electric Companies, which carries on the lobbying activities in Washington.

Between the years of 1941 and 1952, the electric companies' advertising program alone spent more than $5 million for mass circulation news ads and almost $7½ million for national radio and television hookups. Their advertisements appeared regularly in the Saturday Evening Post, Life, Farm Journal, Country Gentlemen, and the Progressive Farmer. They have sponsored such national programs as Nelson Eddy, the Hour of Charm, Helen Hayes, and Meet Corliss Archer.

This is just a small sample of what the electric power companies spend for propaganda purposes. I can go on and on listing their expenditures, but you know them as well as I do. You know that the amount is huge, the purpose improper and the practice inexcusable.

WHAT IS THIS PROPAGANDA?

And what is this propaganda that the electric consumer is being compelled to finance without his consent? There is the propaganda that tries to convince the American people that any activity of cooperatives or any Government agency in the electric power field is socialism. I have here a copy of an advertisement which has on it a map of the United States covered by dots, supposedly representing existing and proposed Federal power and cooperative installations—and in bold print under the map is the question "A Socialistic United States of America?"

This is the most outrageous type of misrepresentation imaginable. The cooperatives are the finest example of private enterprise that we have. They are not Government owned. They are owned by the same farmers that they serve. Coupling the cooperatives with Government installations is completely dishonest—and the power companies know it. Yet they tax their customers in order to feed back to them this lying hogwash. The good farmers who own and operate these rural electric cooperatives bitterly resent this shameful, lying attack on their patriotism. And I for one intend to do something about it.

This whole advertisement is, of course, hogwash. There is no element of socialism even in the Government's power program, The Government is not in the retail electric business and the electric power companies are not in a free-enterprise business. Socialism to me and to the American people means interference by the Government in the free-enterprise system. It does not mean the activities of the Government in the electric power field, any more than it is socialism for a local government to supply its citizens with sewerage facilities or with water. The electric power companies know this just the same as you and I, but they don't care what they say if they can turn the public against Government and cooperative power activities—especially when they can make their customers pay for it.

"TAXPAYING ELECTRIC INDUSTRY"?

And look at all the ads by the electric power companies trying to establish themselves as the "taxpaying electric industry." They don't pay the taxes and they know it. The taxes are included in their operating expenses and all they do is collect it from their customers and turn it over to the Government. They don't pay the taxes—their customers pay them.

And look at all the other misleading propaganda they publish about the rural electric cooperatives. They talk about the profits that the cooperatives are making. What profits? How can a cooperative make profits? How can anyone make profits out of dealing with himself? The cooperatives were organized by their members in order to serve themselves. They serve themselves at cost. Anything that is left over at the end of the year belongs to the same farmers who furnished the money. The power companies know this. They know that cooperatives do not make profits. They know that cooperatives are nonprofit organizations. And yet they keep repeating this same lie over and over again.

Now what possible sense does it make—what possible right do the electric power companies have to spend millions in this type of propaganda advertising and then turn around and charge the electric consumer the cost for having his brain washed? There is no right—neither legal nor moral—and yet this has been going on for years. I ask you—what are we going to do about it?

SALUTE TO PUBLIC SERVICE COMMISSION

Fortunately, some of the State public service commissions are beginning to wake up to their responsibilities and are refusing to permit the power companies to include these propaganda expenditures as part of their operating expenses. I salute the public service commission of Wisconsin for recently ruling that electric power companies cannot charge their customers for the cost of political advertising attacking rural electric cooperatives. But there is not enough of this type of ruling. We need more vigilance and concerted action by all of the State regulatory bodies to make sure that not one cent of this brainwashing fund is charged to the electric consumer. And we in the Congress can do something

about it also. We can pass laws to make sure that the Federal Power Commission does not allow these propaganda expenses to be charged as operating expense in any case before the Federal Power Commission. And we can also pass laws to make sure that these expenditures cannot be relied upon by the power companies to reduce their income taxes.

USEFUL ADVERTISING

There are, of course, types of advertising which are definitely part of the operations of an electric power company. Advertisements which help increase the use of electricity, or which tell the consumers of new electric appliances, or which help educate the consumers on the proper use of electricity—all these are legitimate purposes. And the costs of advertisements relating to these purposes are a legitimate expense of operation. Advertising going beyond this, however, is not an expense operation and must not be charged to the consumer.

Now, I want to make it perfectly clear that I don't care how much these electric power companies spend on their propaganda and I don't care what they say in their propaganda. Of course, like every American, I would like to see the day come when they told the truth for a change. But even if they want to keep on telling their lies, let them do it. Let them say whatever they want to about Bill Langer, and TVA, and Bonneville, and Hells Canyon, and the rural electric cooperatives, provided they pay for it out of their stockholders' money and not charge it to the electric consumer in his electric bill. That is my point: Let them talk, let them advertise, let them do anything they want to do, but let them pay for it out of their own money.

I tell you it is a disgrace and crying shame that this has been allowed to go on as long as it has. Those of us in every branch of every government that have allowed this to go on should hang our heads in shame. We have stood by and watched the electric consumer get robbed of millions of dollars and we have not done anything to stop it. I say that the time has come when we must do something to stop it and I hope that in this session of Congress we can get through some bills which will stop it at least insofar as the Federal Government can stop it. And by the illustration we give by our action, I hope that the State legislatures and the State commissions will stop this robbery at the State level.

TWO PERCENT INTEREST RATE HIGH ENOUGH

Now, there is another thing I want to talk about and that is the current drive that is on to double or possibly triple the REA interest rates. The Director of the Bureau of the Budget sent a proposed bill up to the Congress last June which would raise the REA interest rate from its present level of 2 percent to at least 4½ percent and it might possibly go higher than that. Now, the Government entered into an agreement with the rural electric systems that the interest rate would be 2 percent provided the systems extended service on an areawide basis to all of the people in rural areas who wanted and needed electric service.

The REA cooperatives have carried out their part of the agreement as is evidenced by the fact that more than 95 percent of the farms have electric service today.

At the very same time that the administration sent this bill to the Congress it was negotiating a loan to the British Government for $3,750 million at 2 percent, with permission for the British to waive up to 7 annual payments of interest and principal if payment threatened to work a hardship on them, and they have exercised their right to waive payment. It is all right to lend the British money at 2 percent and waive annual interest and principal payments, but when it comes to our own rural electric systems, which are serving thinly populated rural areas, then this is all wrong.

I am bitterly opposed to any change in the REA interest rate and will fight it as long as I am in the Senate.

I want to give you three or four reasons why the REA interest rate should not be increased:

1. The rural electric cooperatives have a most enviable repayment record. No other agency of the Federal Government in the lending business can claim as good a repayment record. As of June 30, 1957, the rural electric borrowers had paid back $425.8 million in principal and $281.5 million in interest. Furthermore, as of that date, only $200,602 in principal and interest was overdue more than 30 days.

2. Throughout the life of the rural electrification program the Federal Government has made—not lost—money. This fact comes straight from the Comptroller General of the United States who reports in the REA audit for fiscal year 1956 that the REA has a net margin of interest income over interest expense of $54,177,262.

3. As long as the Government continues to subsidize the private power companies under sections 167 and 168 of the income-tax laws there can be no justification for an increase in the REA interest rate except for purpose of destroying the program.

I mentioned earlier the British loan and I will not repeat here anything further on it.

This attempt to raise REA interest rates is nothing more nor less than an attempt by the commercial power companies to destroy the REA systems; and if we are not on our guard here in the Congress, it will be done.

Senator LANGER. I might say further that Senator Young and I appeared at various times on this subject, the last time being a subcommittee presided over by Senator Anderson of New Mexico. At that time Mr. Seaton was here and we went into this matter of North Dakota getting that million acres of irrigated land, which you are very familiar with. Senator Young will go into that this morning.

I just want to say that I hope you will give the North Dakota boys a chance to go into the matter fully and completely as far as the State of North Dakota is concerned.

Senator YOUNG. Mr. Chairman, as my colleague stated, we have several North Dakota witnesses. I would like to read the list of all the names and have them stand, if you will.

The CHAIRMAN. Very well.

Senator YOUNG. These men and women are all directors, managers, or officials of the REA organizations in North Dakota.

Leland Ulmer, attorney, and Wallace Timpe, manager, Mor-Gran-Sou Electric Co-op, Inc.

Henry Boettaker, Cheyenne Valley Electric Co-op.

Howard Ostrom, minuteman, Cheyenne Valley Electric Co-op.

Leslie Trostad, lineman, Cheyenne Valley Electric Co-op.

Lyle Bryngelson, manager, Cheyenne Valley Electric Co-op.

Telford Anderson, president, McKenzie Electric Co-op.

S. A. Forseth, manager, Williams County Electric Cooperative, and Marilyn Forseth and Darlene Leinen, Williston, N. Dak.

S. R. Swerson, REA director, Williston, N. Dak.

R. L. Potts and Mrs. Potts, manager, Burke-Divide, Columbus.

R. C. Samis, director, McKenzie Electric Co-op.

Helge Sherven, McKenzie Electric Co-op, Walford City, N. Dak.

James Galliger, Clarence Miller, George W. Cornog, Henry Svenseon, O. N. Bergman, and Oscar Tweed.

Mr. Chairman, they are all appearing a little later on on your program, I understand.

The CHAIRMAN. Yes. They are all on the list of witnesses that are to appear.

Senator YOUNG. Yes. I would like to say this. I think you will find their testimony interesting, constructive, and worthy of consideration of this committee. I think some of the proposals that they make are something that not only this committee but the Congress will want to consider. It is something that will be well worth while for the future of our area. I thank you.

The CHAIRMAN. Thank you very much. My able colleague from Montana is here this morning, and he wishes to make some remarks. We are glad to have Senator Mansfield.

STATEMENT OF HON. MIKE MANSFIELD, U.S. SENATOR FROM THE STATE OF MONTANA

Senator MANSFIELD. Mr. Chairman, I intend to speak only briefly this morning in order to make two points. First, Mr. Chairman, you and the members of the Senate Interior and Insular Affairs Committee, are to be commended for calling this hearing so that the folks here from the Northwest attending the NRECA convention can have an opportunity to express their views on a problem which is very important to the State of Montana, and a problem which greatly concerns all of us.

The matters of power preference and water rights are essential to the continued growth of the Treasure State. We have an abundance of power and power sites, developed and undeveloped in our State. We Montanans feel that we have a right to a fair share of the benefits derived from these power and water resources. Under the existing program of allocation we in the upstream States are not getting our fair share.

By the winter of 1963 we will not have enough power to meet the needs of our preferred customers, in fact they are not getting all the power they would like to have now. We must have orderly development and allocation of our power resources if these cooperatives are to continue to meet the needs of their customers. It is time the upstream States were heard.

Mr. Chairman, my second and major purpose for coming before the committee this morning is to introduce two men from Montana who are well acquainted with water rights, power preference, and allocation and the construction of transmission lines. These men know the situation and are the best qualified to present Montana's case to you. After you have heard Senator Murray's and my old friends, Senator Charles Mahoney, of Jordan, Mont., representing the Montana REA power distributors, and Robert St. Cyr, of Sidney, Mont., representing the Lower Yellowstone Electric Cooperative, I am confident that you will better understand the situation and I hope you will agree that there is an immediate need for action.

I might say, Mr. Chairman, that you as chairman of the western conference, comprising 14 States extending from the Gulf of Mexico to the Arctic Circle, are in a very important position to bring this matter before the western conference for consideration, and I know that that conference will give this matter great understanding.

At this time, Mr. Chairman, I would like to introduce our fellow citizens from Montana who are here. When I call their names, I would appreciate it if they would stand, although only two of them, Senator Mahoney and Bob St. Cyr, will do the testifying.

J. B. Appinzeller, and Eugene Schuld, of Circle, Mont.; Dwight L. Howard, Savage, Mont.; E. H. Robinson, Sidney, Mont.; George Grosskopf, Belt, Mont.; C. G. McDermott, Fairfield, Mont.; George M. Donaldson, Medicine Lake, Mont.; Adolph Anderson, Westby, Mont.

These are the ones who are here looking after Montana's interests in this matter, Mr. Chairman, and it is my understanding that Senator Mahoney and Bob St. Cyr will lead off in explaining the case as far as we are concerned.

I thank you, Mr. Chairman, for this privilege to appear before you this morning.

The CHAIRMAN. Thank you, Senator.

Following your suggestion, Charles Mahoney will be the first witness this morning. Will you come forward, Mr. Mahoney?

STATEMENT OF CHARLES MAHONEY, JORDAN, MONT., VICE PRESIDENT, UPPER MISSOURI G. & T. COOPERATIVE

Mr. MAHONEY. Mr. Chairman and members, it is a great pleasure for us to have this time to appear before your committee. I might say I am a member of the McCone Electric Cooperative and the vice president of the Upper Missouri G. & T., which is a generation cooperative. I know you men are busy and I don't want to take too much of your time. I appreciate your holding this hearing on a Friday and Saturday when Montana could have this many witnesses present. It is a long way to come to Washington, and they had a job to do down here at this convention. Thank you again for this opportunity.

I want to start out by saying that we of Montana really appreciate, and highly recommend to the Congress that they pass, Senate Resolution 71, introduced by Senator Murray of Montana, Senator Neuberger of Oregon, and Senator Carroll of Colorado. We feel that the time has come that the Congress should look into the business of how water resources and power are being handled throughout the entire United States. If we do not, by the year 2000 I would say that the great hinterlands of the United States will be in a serious water condition.

For me, the future of America depends upon proper and adequate uses of its water. It is a product that we cannot make as we can some of our others. We can use fuels. We are finding a lot of things, such as fuels and other things as substitutes, but not in the place of water.

As far as Montana is concerned, to come to the point, the matter that alarmed us was the hearing in Sioux Falls, S. Dak. In the latter part of November, the Assistant Secretary of the Interior, Mr. Aandahl, submitted to the cooperatives and preference customers in the Missouri Basin what was known afterward as a statistical report. At the time we met in Sioux Falls, we were granted first 88 percent of our needs of the necessary power in the 1963 allocation. At the end of the hearing we had lost 3 percent in Montana. A net loss of 3 percent was very harmful to us for this reason: We are between Fort Peck Dam and Garrison Dam. We are in an area in which rural electrification has made loans on borderline feasibility. If they should have to pay more for power than our loans were figured on, we can jeopardize the Government loans. By this I mean a 1 mill cost-power increase is 16⅔ percent. If we went to 2 mills, it would be better than 33 percent.

Our REA cooperatives in our area are meeting their loans at the present time, but we have no cushion. I just saw the report on McCone Electric for the last year and we had seventy-two one-hundredths of 1 percent as the amount that was an overdeposit of the customers. If we are forced to go to steam in this thin area, the best estimate we have is that the cost of power will go to between 9 and 10 mills.

The other alternative we have is to buy from the power company which I have no objection to, but in the United States a power company is a monopoly in the area in which it operates. It is not like going down to buy a dozen eggs or some other groceries where you have a number of stores or establishments merchandising. The power companies, when we are at their mercy, will dictate first the price and secondly the customers that we might serve.

I have always maintained and always will maintain that we should serve the area in which we pioneered. We should be able to maintain all the customers within that area that we have pioneered. If we are going to let somebody take the cream, I don't think we can continue to exist on the skimmed milk in the area.

In this statistical report that was given out, we first requested 34,000 kilowatts of power in eastern Montana for 10 cooperatives. The Bureau subtracted from that the amount that was served on the west buss of Fort Peck and they subtracted the power that was furnished by other suppliers, bringing this down to approximately 28,000 kilowatts that we had requested off the east buss. The first statistical report gave us slightly over 23,000.

When we took the net loss of 3 percent we dropped to 22,000-and-some-odd kilowatts. We feel in eastern Montana where Fort Peck, at the completion of the second powerhouse, will have 150,000 kilowatts of installed capacity that we should be granted our entire allotment. Montana has furnished the water for Fort Peck Dam, or better than 98 percent of it. Montana has furnished the place for this water to be stored. We don't want to be selfish, but we feel that with 150,000 kilowatts of installed capacity, when we are only requesting 28,000, it should be granted.

Furthermore, Mr. Chairman, we feel that the Congress of the United States should check into and see if the proper interpretation has been made of the O'Mahoney-Millikin amendment of the 1944 Flood Control Act. The people of Montana feel that you, as the Congress, should know what is going on. If you think it is right, we have no quarrel. But we do feel under the present operation through all Government that the legislative branch is losing its control over the affairs of our Government. You have so much to do. Being in the position that I am I know just what you Senators are up against. An investigation not to the question of maybe slandering somebody or criticizing, but to determine actually the facts is the duty of the Congress. Our only right of petition is to the Congress.

Mr. Chairman, I do not wish to take too much time but I would like to sum up at this particular time. We have a map here and I would like to state for the benefit of the committee that I happen to be in the area serviced by Fort Peck. I represent the county in Montana's Legislature that lost more land because of the Fort Peck Dam than any other county in the State of Montana. I have a very difficult time to tell my own people why I must ask them to pay 9 mills or better for power when we have taken all of this loss of taxable value out of our particular county.

I wish further that the committee would check to see if the O'Mahoney-Millikin amendment protected our interest in this particular area where Montana is concerned.

Furthermore, Mr. Chairman, I would like to have the committee determine if we should irrigate the 250,000 acres which Montana

feels she has a right to irrigate, and North Dakota has its million acres which they feel they have a right to irrigate. Senator Young and Senator Langer mentioned this point this morning. What will happen downstream if we take this consumptive use of water? What is to happen downstream in navigation? That should be determined.

We wish to protect our rights in Montana to the 250,000 acres when we get ready to irrigate it. We would like to have our rights protected. We feel in Montana when we are furnishing this much water into the system we are entitled to some return.

If there are any questions, Mr. Chairman, I will gladly try to answer them.

The CHAIRMAN. Are there any questions? Senator Carroll?

Senator CARROLL. Mr. Mahoney, what is your source of power now for the 10 co-ops?

Mr. MAHONEY. The source of power is Fort Peck Dam, the east buss. That has an installed capacity at the present time of 70,000 kilowatts. At the completion of the second powerhouse, it will be 150,000 kilowatts.

Senator CARROLL. How far away is that latter development?

Mr. MAHONEY. The timetable is 1961, Senator. I believe they are going to make it.

Senator CARROLL. I think you said you are now down to 22,000 kilowatts?

Mr. MAHONEY. The statistical report granted to us 22,740.

Senator CARROLL. What is the mill cost now?

Mr. MAHONEY. Approximately 5.5 mills, depending on demand charge, Senator.

Senator CARROLL. If you have to go to steam generation it will run you 9 or 10 mills?

Mr. MAHONEY. Between 9 or 10 mills.

Senator CARROLL. I can say this to you. That is the experience of a recent REA in Colorado not yet in production. They thought they would get it at 9. They now think it will go to 10, with the possibility of going to 11. They are very much disturbed by it.

Mr. MAHONEY. That is correct, sir.

Senator CARROLL. This is a little bit off the subject, but what about your future loan programs? Do you have any contemplated by the co-ops?

Mr. MAHONEY. Senator Carroll, if we have to get power, the Upper Missouri G. & T. is going to make application for a loan to put in a steamplant in this lignite bed area of western North Dakota or eastern Montana.

Senator CARROLL. The reason I ask that question is that I thought I understood you to say something about economic feasibility.

Mr. MAHONEY. That is right.

Senator CARROLL. And you are operating at such a close margin now any additional cost might render some of these programs economically infeasible?

Mr. MAHONEY. That is correct, sir.

Senator CARROLL. Would you be having reference to interest rate on loans, for example? How would that affect you in future developments?

Mr. MAHONEY. If the interest on loans was increased by 1 percent, which would make it 3 percent interest, a 50 percent increase in money

cost, it would certainly prohibit, I would say, any construction of a steamplant in our thin rural electrification area.

Senator CARROLL. I have a notation here that a 1-mill increase is equal to 16⅔ percent.

Mr. MAHONEY. Yes, sir; when figuring at 5.5-mill power.

Senator CARROLL. Do you have any idea how an increase on the interest rate on loans would affect the per mill cost or the percent cost, as you have indicated?

Mr. MAHONEY. Senator, I have never figured that out. I think that possibly we could submit to the committee how it would completely eliminate any construction of a steamplant in our area.

Senator CARROLL. I think this is very important, Mr. Chairman, because some years ago I was on the Public Lands Committee of the House, and we had this very question come up. It is very complicated. The increase in the interest cost, that is. We, as a result of some of our studies, felt that the slightest increase in the rate of interest—this is not REA, we were talking about some of the big projects at that time, and very much interested in the completion of the Colorado Big Thompson—would seriously affect that program and would seriously affect the great programs to come in the future.

Do you still agree with that concept?

Mr. MAHONEY. I certainly agree with that concept for this reason. Rural agriculture in this great northwest area, with its droughts, with the hard winters, of which, Mr. Chairman, we are witnessing one at this time, makes it very difficult. We feel by furnishing the land and the water we have a slight preference under the O'Mahoney-Millikin amendment in that great northwest area. We feel that these people downstream got a benefit of navigation. They are getting a benefit of power because the area is quite large. We feel in this northwest area, as a little in return for what we have thrown into the pot, we are entitled to get our power. We might be all wrong. I feel the Congress' duty is to determine that. It is not within our prerogative to determine.

Senator CARROLL. Just one more question, Mr. Chairman. How many customers do the 10 co-ops serve in this area?

Mr. MAHONEY. I would guess that they serve in the neighborhood of 15,000, Senator. The co-op of which I am the representative and this is McCone, has 2,600 customers and 2,500 miles of line.

Senator CARROLL. How long has that line been in?

Mr. MAHONEY. We started construction of McCone Electric in 1946 and we are still adding about 100 miles a year.

Senator CARROLL. Would you say that the electric service to these people has helped the economy of that area?

Mr. MAHONEY. Senator, it has made it so that we have an equivalent living with other people. It has been the greatest thing that has ever happened to eastern Montana. Central station power has modernized the ranch type of operation to this point, windchargers were fine, little electric plants were fine, but they were limited in their capability. My consumption—and I am a very small type operator—is running about 1,200 kilowatts of power a month. I use it for everything it can be used for and all of our farms are, too. It is the greatest thing that has ever happened to our country, and I would state for all of rural America.

Senator CARROLL. Are the small businessmen up there in favor of this program? Do they know how it has stimulated their own business in the field of electric appliances and other fields?

Mr. MAHONEY. Senator, I might answer you this way. Last year our cooperative of McCone Electric put on a sales stimulation campaign by throwing off $20 on three major appliances. At that time it was composed of a hot-water heater, an electric range, and a clothes dryer. We sold over 10 percent of our customers on those new appliances. This year we did the same thing, but added three more to it. Out of our 2,600 customers, we had 246 new appliances that went on the line this year. If that does not help the businessmen, I don't know. We do not handle them ourselves. I feel that the businessmen in Montana who have heard the storp properly have no objections to REA.

I might state that just last week we put a memorial to the Congress, which I would like to submit for the record, Mr. Chairman, which passed the Montana State Senate unanimously without a dissenting vote. I would like to present this for the record.

The CHAIRMAN. It will be carried in the record at this point in your testimony.

(The memorial referred to follows:)

MONTANA JOINT MEMORIAL NO. 3

INTRODUCED BY MAHONEY (GARFIELD), COTTON THIESSEN, NIXON

A joint memorial of the Senate and House of Representatives of the State of Montana to the Congress of the United States; Hon. James E. Murray and Hon. Mike Mansfield, Senators from the State of Montana; Hon. Lee Metcalf and Hon. LeRoy Anderson, Representatives in Congress from the State of Montana, urging the U.S. Congress to investigate and study the supply, control, allocation, and use of the Missouri Basin waters and power

Whereas it is a well-established fact that the growth and development of any basin area in the United States is dependent upon adequate water supply for industry, agriculture, power, and municipal requirements; and

Whereas the people of Montana are now looking to the Missouri River for large quantities of water for the ultimate irrigation of a quarter of a million acres of land, and are endeavoring to establish industry in this State to maintain and hold the future young people of this State, and in order to have this industry large blocks of low-cost power will be needed for development; and

Whereas it is evident that the present disposition of the Missouri water will result in a shortage of water to meet the aforementioned requirements, in addition to meeting requirements as are now proposed in other Missouri River Basin States; and

Whereas it is imperative that a determination be made as quickly as it is possible regarding an equitable and prudent handling of these Missouri Basin waters so that the most justifiable water requirements can be met to the fullest extent possible with all due regard to the State of Montana, in which over 80 percent of the waters on the Missouri system rise: Now, therefore, be it

Resolved, That the 36th Legislative Assembly of the State of Montana of 1959, now in session (the senate and house of representatives concurring), do recommend to the Congress of the United States that they immediately proceed with a complete investigation and study of the Missouri Basin water-supply situation. This investigation and study to cover the present method of control and allocation of water, control and allocation of federally generated power, and the question of maximum financial return to the Federal Government through the sale of such power as it shall produce; be it further

Resolved, That the Congress of the United States make a study of the present application of the O'Mahoney-Millikin amendment to the Flood Control Act of 1944, to determine if there is any abrogation of that amendment; be it further

Resolved, That the Congress of the United States take such steps as shall be necessary to the end that Montana people and Montana industry shall be given first consideration in the adjudication of water and power distribution, and to protect their rights in such water and such power already established, whether by use or otherwise; be it further

Resolved, That copies of this memorial be forwarded by the secretary of the Senate of the State of Montana to each of the individuals named in the title of this memorial; Hon. James E. Murray and Hon. Mike Mansfield, Senators from the State of Montana; and Hon. Lee Metcalf and Hon. LeRoy Anderson, Representatives in Congress from the State of Montana.

Senator CARROLL. Thank you very much, Mr. Chairman.

The CHAIRMAN. I think this is a very important matter you have been discussing. You may be sure that the committee is going to give it very careful study. At the time the REA first organized in Montana to get power on the farms, did the private-power companies attempt in any way to answer that problem?

Mr. MAHONEY. Senator Murray, the private-power companies, like any other monopolies, only do things that they are forced to do. They made no effort at that time to serve rural people in the State of Montana.

The CHAIRMAN. Do they actually try to interrupt your efforts?

Mr. MAHONEY. Senator, in the particular area in which I live, there was no private-power company operating except for the cities, and we have never run into any conflict with them. There was never any effort made to serve these people. As far as I know, and particularly in our own cooperative, we did not have any trouble. But I will say this: The understanding I have is that the construction by the Federal Government of the Haver Shelby transmission line was the greatest boost to the rural electrics in the State of Montana, because the power cost was brought down all over the State from the private-power companies to the rural electrics by the goodness of the Congress building this transmission line.

The CHAIRMAN. I remember that situation very well. It was a wonderful victory we won to get that line. The power was being turned over to the private interests at dump prices.

Mr. MAHONEY. That is correct, sir.

The CHAIRMAN. The farmers were not getting any benefit from all that power that was being created largely through their contribution to the program. They were getting nothing out of it.

Mr. MAHONEY. That is right, sir.

The CHAIRMAN. So the struggle to get the Haver-Shelby line was a wonderful piece of work.

Mr. MAHONEY. You brought down power costs to all the cooperatives within the State, the same price that the Bureau was charging their own preference customers. This was one of the greatest victories for our other cooperatives. We didn't have transmission lines or facilities to serve the other cooperatives of the State of Montana.

The CHAIRMAN. Thank you very much for your very valuable statement here this morning. I am sure the committee will study it very carefully and act on your suggestions.

Mr. MAHONEY. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness will be Mr. Robert St. Cyr, of Sidney, Mont.

STATEMENT OF R. M. ST. CYR, MANAGER, LOWER YELLOWSTONE RURAL ELECTRIC ASSOCIATION AND UPPER MISSOURI GENERATION AND TRANSMISSION ELECTRIC COOPERATIVE

Mr. ST. CYR. Mr. Chairman and members of the committee, my name is R. M. St. Cyr. I am manager of the Lower Yellowstone Rural Electric Association and the Upper Missouri Generation and Transmission Electric Cooperative, both headquartered in Sidney, Mont. I have been working in the rural electric movement since my discharge from the Eighth Air Force after 2½ years overseas service following World War II.

During all of my period of service, all of the distribution rural electric cooperatives that I have worked for have received 100 percent of their power from the Bureau of Reclamation, not, mind you, 55 percent or 89 percent, but 100 percent of their power requirements have been furnished by one power supplier, the Bureau of Reclamation. It is my opinion and contention that any time any consumer, member, or utility receives 100 percent of their power from one supplier for this great length of time, approximately 12 years, that the power supplier has a utility responsibility to those he serves, whether he admits it or not. In this case, it would be the Bureau who has this utility responsibility to the rural electrics that it has been serving on a longtime basis.

When I speak of a utility responsibility I mean that the Bureau has the implied responsibility to see that its customers, and particularly its old customers, have all the power they need and when they need it. In order that no misunderstanding occurs here today, it is my contention that the Bureau of Reclamation has the duty to supply the Lower Yellowstone Rural Electric Association with all the power they need today, next year, and thereafter at 100 percent of their requirements.

Remember that for years they have done just this and now, after our lines are built, based on a feasibility study of cheap power for our members, they expect us to go to the open market to buy power—high-cost power that may well force the rural electrics in our area out of business, thereby resulting in the U.S. Government losing millions of dollars in loans. I feel this is a very shortsighted view, and one that should be corrected immediately, by legislation if necessary.

My remarks here today are not a criticism of Bureau personnel, many of whom are doing a splendid job, but rather a criticism of the higher-ups that establish policy in these matters.

Another point I wish to make is in regard to the Missouri Basin marketing area. The eastern Missouri Basin marketing area has been extended far beyond the boundaries of the Missouri River drainage area itself.

The area is not too large for economic transmission of bulk power, but obviously the people who laid out the area assumed that the Bureau of Reclamation was going to supply the major quantities of bulk power to the distributing systems throughout the area. No businesslike administrator would lay out a marketing area so large that he could only supply a tiny fraction of its power requirements.

Obviously, it was intended when this area was laid out to provide more power than just the amount available from the Missouri River

dams. Otherwise, even the present size of the area does not make sense. When the marketing area was laid out, the Bureau of Reclamation accepted Federal utility responsibility at least for the needs of the preference customers in that area. Unless the Bureau is ready to accept such utility responsibility—and build the necessary generating facilities to serve it—no new area should be added until requirements of the existing preference customers in the old area are fully met.

You people who are conducting these hearings are the last hope of those who live and work on the Great Plains of the Missouri Basin, to receive the cheap, low-cost power that our members need to have a decent standard of living, and to economically conduct their farming affairs. I thank you for your time.

The CHAIRMAN. Are there any questions?

Senator MOSS. I have none, Mr. Chairman.

The CHAIRMAN. Thank you for your very able statement. We have a great many witnesses and many questions can be asked, but I know you would answer them correctly in line with what you have already testified.

Mr. ST. CYR. That is correct, Senator.

The CHAIRMAN. Thank you for your statement.

The next witness will be Kenneth Holum, Aberdeen, S. Dak., executive director, Midwest Electric Consumers Association.

STATEMENT OF KENNETH HOLUM, EXECUTIVE DIRECTOR, MIDWEST ELECTRIC CONSUMERS ASSOCIATION, ABERDEEN, S. DAK.

Mr. HOLUM. Thank you, Mr. Chairman.

Mr. Chairman, and gentlemen of the committee, my name is Kenneth Holum. I appear here today as executive director of the Midwest Electric Consumers Association. Although our organization is new, we incorporated in July of 1958. Our membership is growing rapidly and we can speak for a representation of preference customers in all eight States of the Bureau of Reclamation marketing area in the Missouri Basin. Our membership includes rural electric cooperatives, municipal systems, and consumer power districts.

Midwest was originally organized because it was becoming increasingly apparent that a strong voice was needed to speak for the preference customers in the Missouri Basin if they were to receive the consideration which they merit because of their substantial contribution to the Missouri River development program. Our rapidly growing membership list testifies to the widespread concern of preference customers as to the policies and programs being followed in our river basin.

This concern, which was already in existence, was magnified when tentative allocations of firm power from all the generators on the main stem of the Missouri River, with the exception of Big Bend, were considered at Sioux Falls, S. Dak., on December 10, 11, and 12. At that time, we learned that the Bureau of Reclamation would be able to satisfy between 80 and 85 percent of the power needs of the preference customers in 1963 sometime in 1965 if appropriations are adequate to keep the main stem projects on schedule.

At the same time, we learned that the Bureau was offering for sale approximately a million kilowatts of firm energy from a system with the machine capacity to generate 1,600,000. It was obvious from the presentation that the Bureau of Reclamation with the responsibility for power marketing had had little to do with determining the amount of power available.

As a result, the preference customers find themselves in an impossible position. They must meet the growing power needs of their customers. They are determined to make that power available at the lowest possible cost. Every preference customer finds itself short a little power. None of them can know whether that shortage will develop in 1962–63 or 1965.

How can they predict when power will be available from Oahe with inadequate budget requests and appropriations continually delaying its completion?

We feel strongly that the Missouri River project should be managed in such a way as to make possible sound and reasonable financial planning on the part of the power customers. That is impossible at the present time.

We are just as strong in our convictions that the project itself should be managed in such a manner as to maximize the beneficial use of the basin's resources to the area and the Nation and so as to return the maximum financial return to the Treasury. We are certain that the present divided authority and responsibility in the basin are not meeting these criteria.

With power shortages among preference customers scattered all over a six-State area these preference customers must either build small, inefficient generating facilities that modern techniques have made obsolete before they are even placed on the drawing board or they must find ways to pool these shortages so as to justify the larger and more efficient generating units that the area's total power deficiencies require.

When the preference customers have attempted to pool their shortages they find—

(1) That the Bureau of Reclamation does not recognize preference rights of preference customers to the excess capacity of the Bureau of Reclamation transmission lines;

(2) That the Bureau refuses to recognize displacement of power and charges wheeling and assesses losses on power that never really moves across their system; and

(3) That serious gaps exist in the Bureau's transmission system that makes exchanges of power across the area either extremely difficult or impossible. We believe that all three of these deficiencies are unrealistic and should be corrected either by changes in administrative policy, or, if necessary, by appropriate congressional action.

For the present and the near future, we contend that wise and proper management of the resources in the basin will make it possible for the Bureau of Reclamation to serve all the requests of the preference customers—to their advantage and to the advantage of the irrigation projects which must and will be developed in the future.

In order that the public may properly appraise the management plans of the operating agencies, there is certain basic information that should be made available to the public.

The public needs—and may I suggest that this committee require the agencies to furnish—accurate information:

(1) As to the amount of water available to the system based on current and restudied "Adequacies of flow reports," taking into consideration the amount of water needed to fill the pools to their operating levels and the operating experiences of the past several years.

(2) The amount of water is dedicated to navigation and its relationship to the total water supply available when determining that a system with an installed capacity of 1,600,000 kilowatts will produce only 1,033,000 kilowatts of firm energy in 1965.

(3) As to how much additional power could be generated if the O'Mahoney-Millikin amendment were enforced and water for the generation of power were given preference over water for a free-flowing navigation channel.

(4) In what amount would this order of priority increase the revenue from the project?

(5) Does the 1,033,000 kilowatts in 1965, currently being marketed by the Department of the Interior, represent firming to an average water year? If not, what relationship does it bear to an average water year?

(6) How much water is required at normal operating elevations to operate each of the main stem powerplants at full capacity?

(7) Recognizing that irrigation will ultimately have priority over both power production and navigation and that power revenues will be required to subsidize irrigation, does it not seem proper that the water which will ultimately be dedicated to irrigation be used at present to generate power?

(8) What studies have been made with respect to payout schedules and economic feasibility if the Government were to integrate into its system large thermal generating units using the cheap fuels that are available in abundance in the basin?

(9) What studies have been made with respect to navigation on the Lower Missouri employing conservation pools? How much water could be saved? How much additional power could be generated?

Lacking all of the needed information and the specific information required by the preceding questions, we are nonetheless convinced that wise and proper operations would meet the requests for power by the preference customers.

In 1952, I was a member of the Missouri Basin Survey Commission. We employed competent staff people and took a hard look at the whole project, including navigation features. We studied the cost of the project, the commodities available for water shipment upstream and downstream, the amount of water required to sustain the project and the estimated savings available to shippers because the whole project is nonreimbursable.

To summarize the Commission's finding, I quote from its report, "The Report of the Missouri Basin Survey Commission" page 123:

> The Commission has already pointed out that navigation should have the lowest priority in the use of water in the Missouri Basin. Estimated savings from navigation do not by themselves provide a favorable benefit-cost ratio for the navigation share of the channel stabilization project. This is likewise true of navigation savings assigned to upstream dams. Even if navigation did show a favorable benefit-cost ratio there is a question whether limited public funds should be used for this purpose in view of the available alternative trans-

portation facilities. It is, therefore, questionable if navigation should be continued as an objective of basin developments.

In view of its questionable economic value and in the light of the tremendous amount of precious water that must be siphoned out of the dry Upper Basin States, I suggest that the Congress insist upon a strict interpretation of the O'Mahoney-Millikin amendment with respect to the navigation feature and that studies be authorized with respect to slack water navigation which I trust will prove more feasible.

Before our downstream friends protest too much, and I refer to Kansas City, and even New Orleans, that we are seeking to deprive them of one of their benefits from the Missouri River project, may I hasten to remind them that the Upper Basin States are cheerfully providing the storage for the floodwaters which have caused them so much destruction in prior years.

If we save and put to beneficial and productive use the water that is currently dedicated to the uneconomic free flowing navigation channel and if the Government will firm the hydro power to the point of the maximum economic return either by constructing thermal or nuclear generating capacity or by leasing such capacity from others, I am confident that the Bureau of Reclamation can meet the total power requests of the preference customers.

I could very easily spend a considerable amount of the committee's time discussing fuels available in the Missouri Basin that are capable of generating electric energy in large quantities and at low cost if properly developed on a large scale. It seems more appropriate to me that these fuels be studied by a power marketing agency that feels a real responsibility to serve its customers and develop the resources of its area.

Rather than attempt to cover the whole field of available fuels, let me just cite the lignite in North and South Dakota as one possibility. Lignite coal exists in tremendous quantities in the western half of these two States. Modern techniques, which burn these fuels efficiently and at the same time recover valuable byproducts make possible the generation of power at costs that are extremely low.

Large thermal generating plants in the 100,000 kilowatt or 200,000 kilowatt bracket using lignite coal for fuel could very properly be integrated into the hydro system on a base loading basis to free our valuable water to be used for peaking. Hydro power, of course, is unexcelled for peaking purposes.

Water is much too precious a resource in the Missouri Basin to be considered an isolated resource and developed without giving consideration to other resources that may supplement its use. Just as the Missouri Basin Survey Commission recognized that we could not afford to consider spending our water for navigation without considering alternative methods of transportation, so, too, I suggest that our use of water for the development of electric energy is not complete, or economically sound, unless we develop our other energy producing resources in such a way as to make the maximum use and secure the maximum economic return from the water available to generate electric energy.

Unfortunately, these possibilities and many others in the basin remain largely unexplored because no agency in the basin has the

responsibility to make certain that all of the area's resources are being properly developed to meet the area's needs and to make possible its maximum contribution to the national economy.

From time to time, we have complained, and I know we have had the sympathy of the chairman of this committee and other members, as well, that the present management of the Missouri Basin with its multiplicity of agencies and their divided responsibilities, have made it impossible for us to get positive answers to questions we have to ask if we are going to plan wisely. Even more serious, and I think the problems we bring to you during these hearings emphasize the gravity of the matter, is the lack of responsibility for continuing study, research, exploration, and development.

Last summer it was my rare privilege to serve as chairman of the Theodore Roosevelt Conservation Conference held in Denver, Colo., October 1 and 2. Our purpose was to recognize the contributions made by the illustrious former President to the idea that America's resources should be conserved and developed for the good of its people.

It may be inappropriate to single out any one individual as having made the most useful contribution to our splendid program. However, I think we were in complete agreement that a message we received from Mrs. Gifford Pinchot, widow of the great leader and conservationist of the Roosevelt administration, was the highlight of the conference.

Because what she had to say bears specifically on the lack of planning which I have just cited, I should like to read to this committee the concluding paragraph of her message:

> Barely touching upon the problem of water points up the need for a great concentration of thinking and action in the field. Some leaders, I know, have been appalled at the fact that there is no one single agency in our great Government devoted to this task. I do not know what should be done, and therefore I cannot presume to advise on this project. But the time, it seems to me, is long overdue for not merely talking about but pressing for some steps to bring greater order into our water planning and thinking. In recent years there has been some talk but no action about a proposed merger of the two great water agencies, the Bureau of Reclamation and the Corps of Engineers. Projects built by either of these agencies have important effect upon the activities of the other. Both build projects which make tremendous contributions to our ever-needed electric power production. It would seem to me that this step should be accomplished soon and I believe this should be a civilian rather than a military agency of the Government.

I and other spokesmen for the Midwest Electric Consumers Association who are here and hope to testify as part of this hearing will bring to this committee serious problems that affect the well-being of a great area of the Nation. We appreciate the opportunity to bring our problems to your attention. We are hopeful and confident that this committee will initiate action that will bring these problems to a happy and quick solution.

May I say that since coming to Washington I have learned of the introduction of Senate Resolution No. 71, introduced by Senators Murray, Neuberger, and Carroll. I think one of the things we would most highly urge is that Senate Resolution No. 71 be adopted. I think the studies that this resolution seeks to initiate are exactly what we need in the Missouri Basin and across the Nation if we are going

to meet the ever-growing power needs of a nation that wants to stay strong and prosperous and do well for its people.

I thank you very much.

The CHAIRMAN. Thank you very much. Are there any questions of the witness? If not, thank you very much for your very valuable statement. You have been of great help to the committee.

Mr. HOLUM. Thank you, Senator.

Before I leave, could I introduce for the record a statement prepared by the manager of the Central Electric Cooperative of Blunt, S. Dak., who was not able to be here this morning?

The CHAIRMAN. It will be carried in the record at this point.

(The statement referred to follows:)

STATEMENT OF GLENN E. OLERUD, MANAGER, CENTRAL ELECTRIC COOPERATIVE ASSOCIATION, INC.

I am Glenn E. Olerud, manager of the Central Electric Cooperative Association, Inc., Blunt, S. Dak. The cooperative distributes electric power and energy to rural areas of Hughes and Sully Counties which are located in the geographical center of South Dakota. The cooperative also serves the Oahe Dam, presently serving the Corps of Engineers, U.S. Army; and four construction contractors presently holding contracts at the Oahe Dam.

The construction contractors need large amounts of power. It is expected that the peakload in 1959 will reach 3,000 kw. The cooperative takes delivery of power at the Oahe temporary substation, owned by the Bureau of Reclamation.

The cooperative buys seasonal firm power from the Bureau of Reclamation during the navigation season. During the nonnavigation season, which is about 5 months, the cooperative must buy power on the open market. At times the cooperative has purchased wholesale power at a cost which is equivalent to its selling price in order to maintain a steady flow of power to the contractors at the Oahe Dam.

The cooperative has believed and still feels that sufficient power to serve the needs of the contractors should be furnished the cooperative by the Bureau of Reclamation on a year-around basis. After all, the cooperative, by its efforts to serve the contractors, is also helping to build facilities that will be operated by the Bureau of Reclamation and which will produce large quantities of power so sorely needed.

The equipment presently installed in the Oahe temporary substation is owned by the Corps of Engineers and will be installed in the switch yard of the Oahe Dam. When the construction schedule has been reached wherein this equipment is to be moved, the Oahe temporary substation will be out of service.

This means that the Central Electric Cooperative Association, Inc., must provide a substation in order to maintain service to the contractors until the Oahe Dam is completed. A conservative estimate of the cost of such equipment to be installed by the cooperative is $50,000. The period that the cooperative must provide its own substation will be short and it is questionable if the cooperative can recover this additional investment. However, the board of directors and management of the cooperative feel that they have an obligation to maintain the service to the construction contractors. Lack of service and power during the final years of construction would greatly impede the completion of the dam and also increase the construction cost.

The cooperative has endeavored to obtain definite information as to the date the facilities of the Bureau of Reclamation are out of service so that the cooperative may be prepared to replace such facilities at its own expense. To date, such information has not been made available to us except in a vague manner which could fluctuate as much as a year or more. It appears to the cooperative that there should be more coordination between the Corps of Engineers and the Bureau of Reclamation. Lack of proper coordination between Government agencies where both agencies are vitally interested in the same project can only result in one thing, delay in completion and in many instances, additional costs.

Senator CARROLL. Mr. Chairman, before Mr. Holum leaves, I would like to ask a question.

On page 1 of your statement in the fourth and fifth paragraphs, you say:

> At the same time we learned that the Bureau was offering for sale, approximately a million kilowatts of firm energy from a system with a machine capacity to generate 1,600,000. It was obvious from the presentation that the Bureau of Reclamation with the responsibility for power marketing had had little to do with determining the amount of power available.

In paragraph 3 you indicate that in the meeting held in Sioux Falls, S. Dak., on December 10, 11, and 12, the Bureau of Reclamation would be able to satisfy between 80 and 85 percent of the power needs of the preference customers in 1963 and some time in 1965. Would that meet your requirements if the Bureau could do that?

Mr. HOLUM. If they could deliver 1,600,000 of firm energy.

Senator CARROLL. I have reference to this 80 to 85 percent.

Mr. HOLUM. The 80 to 85 percent, of course, is the percentage of power that the Bureau tentatively allocated to the preference customers that they needed to supplement the generation that they have themselves. If the Bureau were to deliver 1,600,000 kilowatts of firm energy that would meet the requirements of the preference customers in 1963 and I believe in 1965.

Senator CARROLL. This raised a question in my mind and that is why I read paragraph 4. According to your statement, the Bureau of Reclamation has the responsibility for power marketing, but by your own words they had little to do with determining the amount of power available. Who makes that determination?

Mr. HOLUM. Senator, it has been my very strong feeling for the long time that I have been interested in the Missouri River development program that the divided responsibility that we have at the present time was not securing in every instance decisions that were in the broad public interest. It has for a long time been my conviction that the decisions as to the amount of power available, and how the water was going to be used were being made and being dominated by one agency rather than being made in the total interest of all the people. I cannot cite to you any specific statement, but many of those who spoke for the Bureau of Reclamation at the hearings in Sioux Falls indicated in the way they made their presentation that they had been told that the operating plans for the Missouri River system would generate 1,035,000 kilowatts of firm power in 1965, and that is what they could market.

Senator CARROLL. When we talk about divided responsibility is this in a sort of nutshell what we are talking about: That the Bureau has the responsibility for marketing power, but the Corps of Engineers has another type of responsibility.

Mr. HOLUM. That is right.

Senator CARROLL. This is what we are talking about when we talk about divided responsibility, is it not?

Mr. HOLUM. That is right. I think it is a very serious matter. I would like to repeat again that I think now we are coming to recognize in the Missouri Basin that the divided responsibility for operating is a serious deficiency. We have known that for a long time. I think we are realizing today more than ever that divided responsibility means that there is no responsibility for planning and for looking into the future. I think that is even more serious.

Senator CARROLL. I have just one further question, Mr. Chairman. Do I understand that the Bureau was offering for sale approximately a million kilowatts of this 1,600,000? To whom were they offering it for sale?

Mr. HOLUM. To the preference customers.

Senator CARROLL. With respect to the balance of the power, would that be offered to someone else? What is that situation?

Mr. HOLUM. Of course, under the present operating plans the 600,000 capacity will apparently not be firm energy. The Department of Interior was not willing to give us any indication in Sioux Falls as to what their plan was for disposing of these byproducts, probably much of it very valuable peaking energy. They told us that they had no plans developed at the present time.

Senator CARROLL. In other words, you folks have not gotten the information.

Mr. HOLUM. That is right.

Senator CARROLL. Perhaps if we pass this resolution in Congress we can get that information.

Mr. HOLUM. I certainly hope you pass the resolution.

Senator O'MAHONEY. Mr. Holum, before you leave, a few questions have been suggested to my mind.

Was this a public hearing to which you refer in Sioux Falls?

Mr. HOLUM. Yes, it was.

Senator O'MAHONEY. Was a record kept of that hearing?

Mr. HOLUM. I don't believe so, unfortunately.

Senator O'MAHONEY. No stenographic record was kept?

Mr. HOLUM. I believe not.

Senator O'MAHONEY. What representative of the Department of Interior or the Bureau of Reclamation gave the testimony to which you just referred?

Mr. HOLUM. The spokesmen for the Department of Interior and Bureau of Reclamation were Assistant Secretary Aandahl and Mr. Baker.

Senator O'MAHONEY. Do we understand that it was Assistant Secretary Aandahl who said at this meeting that the Department of Interior had nothing to say at that time with respect to the amount of power that would be available in later years?

Mr. HOLUM. Senator O'Mahoney, he didn't say that exactly. There was no particular and specific quotation that I or anybody else who was in attendance at that meeting could point to that would say that. It was just the very broad impression that was given that the Bureau of Reclamaion had been told, "Here is a million kilowatts of energy that you can sell."

Senator O'MAHONEY. Can you tell this committee if any impression was given to you who told the Department of the Interior that fact?

Mr. HOLUM. No; I don't think there was anything said in Sioux Falls that contributed to that impression on my part. But I have worked for a long time with the Missouri River program, and I think as a result of an accumulation of information, including my participation in the Missouri Basin Survey Commission, all things have led me to believe that most of the decisions having to do with the operation of the main stem reservoirs in the Missouri River were made by the Corps of Army Engineers.

Senator O'MAHONEY. Thank you.

The CHAIRMAN. Thank you very much for your very valuable statement, Mr. Holum.

Mr. HOLUM. Thank you.

The CHAIRMAN. The next witness will be J. W. Grimes, of Pierre, S. Dak. You may proceed.

STATEMENT OF J. W. GRIMES, CHIEF ENGINEER AND EXECUTIVE OFFICER, SOUTH DAKOTA WATER RESOURCES COMMISSION

Mr. GRIMES. My name is J. W. Grimes. I am chief engineer and executive officer for the South Dakota Water Resources Commission. The Governor of South Dakota asked that I testify before your committee at these hearings, and at this time I have a prepared statement by our good Governor which, with your permission, I would like to have inserted in the record at this time.

The CHAIRMAN. It will be carried in the record at this point.

(The statement referred to follows:)

STATEMENT OF RALPH HERSETH, GOVERNOR OF SOUTH DAKOTA

Mr. Chairman, gentlemen of the committee, the State of South Dakota has a tremendous interest in the project for the development of the Missouri River and its resources.

South Dakota has contributed, or will contribute, approximately 500,000 acres of its valuable river bottom land to the reservoirs on the main stem of the river.

Perhaps of even greater importance because South Dakota is a State where everything that we do or attempt to do is limited by the amount of water available, the State will contribute a substantial amount of the water available for impoundment in these reservoirs.

Because of the substantial contribution made by South Dakota to the project, we feel completely justified in asking the Congress and the Federal administrative agencies to consider the wishes of South Dakota and its citizens in the operation of the project. By a happy coincidence, we believe that the interests of South Dakota coincide with the broad, national public interest.

Two years ago the South Dakota Legislature adopted, unanimously, a concurrent resolution asking the Congress to investigate and enforce the O'Mahoney-Millikin amendment to the Flood Control Act of 1944. Currently, our legislature is considering a concurrent resolution declaring it to be the policy of the State to pursue a course of action that will promote the maximum benefits from water impounded within the State for the good of its citizens.

At the present, we need water to supply our municipalities for domestic purposes and industrial developments. Ultimately, we hope to see much of the water that finds its way into the river returned to the land for the purpose of irrigation.

At the present time, we need electric energy in amounts that are increasing substantially every year that passes. Rural electrification was possible in most of South Dakota only when the Bureau of Reclamation wholesale power rates were projected into the feasibility studies. It was not good news for South Dakotans to learn that in 3 or 4 short years the demands of our preference customers will outstrip the power available to them under present river management.

In return for sacrificing our lands to provide flood protection for the lower basin States, South Dakota is justified in asking that its water be used for the maximum good of its people.

At present, this criteria demands that the water impounded in South Dakota and the States above South Dakota be used to generate the maximum amount of firm power. South Dakota will benefit from this policy in two ways:

1. More power will be available to meet the ever-growing needs of the preference customers within the State; and

2. More revenue will be available to the basin account to finance the irrigation projects which we hope to begin developing in the near future.

With South Dakota providing storage for the floodwaters that have repeatedly plagued our downstream neighbors, we feel that we have discharged our responsibility to those good neighbors. To ask, in addition, that we dedicate two-thirds of our limited water to a 9-foot, free-flowing, navigation to the detriment of our own interests seems unreasonable.

The State of South Dakota is not unfriendly to navigation on the Lower Missouri. We should like to see that navigation, however, developed in a way that is less wasteful to our water. Every other major waterway in America has slack-water navigation and conservation pools. This proven technique has never been studied for the Missouri. I suggest that the Congress instigate such studies immediately.

Present plans for the operation of the powerplants in the main-stem dams will produce a million kilowatts of firm power from 1,600,000 kilowatts of installed capacity. Certainly, good economics demands that we do much better.

I am convinced that much more firm power can be produced by managing our water wisely and inconformity with the O'Mahoney-Millikin amendment. I am convinced that the return to the Federal Treasury and indirectly to the development of irrigation in South Dakota can be substantially increased if other forms of energy are developed and are integrated into the Missouri River hydroelectric system.

South Dakota has a tremendous resource of lignite coal which, if developed on a large scale, can produce almost limitless quantities of electric energy at most reasonable rates. We would welcome the construction of experimental, nuclear-type reactor generators in South Dakota for baseloading purposes, integrated with Missouri River power.

As Governor of the State of South Dakota, in the best interests of the people of my State, and so that South Dakota may make its proper contribution to the national economy:

1. I urge then, that the Congress initiate an investigation of slack-water navigation on the Lower Missouri River as a sound technique for water conservation.

2. I suggest that South Dakota's lignite coal be explored and developed as a sound corollary to our hydro development.

3. I invite the United States to construct a large, nuclear powerplant in South Dakota to further our national exploration in this vital area and to supplement our inadequate power supply.

Mr. GRIMES. I am a member of the Coordinating Committee for Missouri Main Stem Reservoir Operations which is composed of Federal agencies and State representatives. Also, I have other assignments associated with Missouri River development.

South Dakota State government has supported the development of the water resources of the Missouri River as authorized by the Flood Control Act of 1944 and as outlined in the documents supporting this act (S. Doc. 191, H. Doc. 475, and H. Doc. 247). This support came forth with knowledge of the long construction period anticipated, during which sacrifices of valuable land and other rights-of-way would be necessary before primary benefits would be available for the people of our State. First things had to come first. However, during recent years, we have become more and more concerned about the delays which have lengthened the construction period.

Most of the Missouri River main stem dams have been built. Freedom from flood damages and the bases for increased crop production are accomplished facts for the 1 million acres of rich agricultural lands along the downstream reaches of the river valley. The large urban and industrial areas of the basin are protected. Their enhancements are in progress. However, most of the 1 million acres of river valley lands in North and South Dakota plus large acreages in Montana and Wyoming are inundated by reservoir waters.

The constructed reservoirs are being filled. Controlled water releases are being used for water supply, sanitation, and navigation

along the downstream reaches of the river and for electric power and energy throughout much of the Missouri River Basin. Since these services were inaugurated, demands have exceeded the current capabilities of the water supply. There is a long way to go before the multiple-purpose storage capacities of presently constructed reservoirs are full. As of now, about one-fifth of the present usable water storage job has been accomplished.

The existing benefits, except for electric power and energy, are confined primarily to the immediate vicinity of the main stem valley. The planned water service to the needy areas adjacent to the main river valley are yet to come.

Such, gentlemen, is a thumbnail sketch of the status of the Missouri Basin development. There is much to be proud of. There is much to do.

On May 1, 2, and 3, 1957, this committee held hearings concerning the Missouri Basin development. The record of those hearings (joint hearings before the Commmitte on Interior and Insular Affairs and the Commmittee on Public Works, U.S. Senate, 85th Congress, 1st sess., on problems of operation of multiple-purpose projects in the Missouri Basin) contain very valuable information concerning the hopes and fears of basin residents, contentions and desires of beneficiaries, policies and interpretations of law by the Federal construction and operating agencies, offensive and defensive arguments of conflicting interest and, indeed, the whole gambit of water-shortage problems.

Even though much of this information will be repeated during your current hearings, the record from May 1, 2, and 3, 1957, provides a wonderful encyclopedia by which pertinent issues may be sharpened and optimum solutions may be reached.

When outlining my position for purposes of your current hearings, I will try to focus on current relationships but most of the circumstances creating them were present before your hearings in May 1957.

I believe it is important to remember constantly that, when reference is made to kilowatts of electric power or depths and widths of a navigation channel, the common denominator in Missouri Basin operations now is cubic feet per second which is the measurement of the instantaneous flow of water. There is no shortage in this capability in the Missouri River now. However, when reference is made to kilowatt-hours of electric energy or length of navigation seasons, the common denominator is acre-feet which is the measurement of volume of water. This factor is the source of problems now. The height that water falls through the dams is a factor affecting electric power and energy but has no bearing on navigation depths or length of season.

Put quite frankly, present Missouri River operating problems are created by trying to do too much with not enough. Navigation seasons up to now have been shorter than ultimate plans provide because the extra 2,500,000 acre-feet of additional water needed each season have not been available. Electric energy supplies have been short during the winter seasons because downstream water releases are not made for this purpose alone. Water for navigation cannot be borrowed, but about 50 million kilowatt-hours will be borrowed to meet electric energy commitments this winter. The many phases of con-

flict and proposals, which I am sure will be presented during these hearings, have their basic roots in this simple fact, that commitments for water service are beyond the ability of the water supplies to furnish. Under imposed conditions both natural and manmade, the technical accomplishments in satisfying the water service demands so far have been heroic and lucky.

I assume an unusual audacity by suggesting adjustments in present reservoir operations which I believe are necessary during the current construction period. These suggestions may not apply if clarifying legislation defines generation of electricity as an industrial beneficial consumptive use of the waters arising in States wholly or partly west of the 98th meridian under provisions of the so-called O'Mahoney-Millikin amendment in the Flood Control Act of 1944, or other legislation, changes the existing criteria for operation of the Missouri River main stem reservoirs:

1. Filling of reservoirs should be a primary objective of operations until accomplished. Representatives of South Dakota State government have stressed this requirement during the past 3 years. We must get to the starting point of the reservoir operation studies, which justify the promises of the Missouri River program, before the planned benefits can be realized. We cannot depend for this purpose upon the hope for that same upstream flood year which was feared so much only a few years ago. If we get such greater than average flows, our waiting period is lessened, but we cannot plan on it to bail us out of our difficulties.

2. In order to accomplish the reservoir filling job (if followed, we may get the job done in 5 or 6 years, sooner if we get greater than average upper basin flows):

(*a*) Minimize water supply and sanitation releases. Pollution creating centers should get their cleanup jobs done expeditiously.

(*b*) Limit navigation seasons to 5 months.

(*c*) Supply power to only that portion of the marketing area where customer loads can be fully satisfied by the most advantageous reservoir operations and such other arrangements as may be possible.

3. Prepare interim construction period reservoir operation studies so we know what to expect and how to plan.

4. Complete Oahe Dam and Big Bend Dam as expeditiously as possible.

5. Build the flood-control dams, including multiple-purpose storage space, on the lower basin tributaries right away. The controlled release of floodwaters may be used for navigation.

Such a suggestion is harsh, I know. So is the present situation which, if continued, is solvable only with the luck of upper basin flood occurrence. I don't believe we should gamble. These suggestions or their equivalent are necessary now if continuing and more serious controversies are to be avoided.

There are many, probably, who will take the position that my suggestions are motivated by selfish interests. This is not so. However, it may be well to point out that: (1) The welfare of flood-control beneficiaries is offset by permanent flooding of an equal acreage. Speaking percentagewise, I venture to say that the economic loss to flooded States is equivalent to economic gain in protected States. (2) Delays in realizing the optimum navigational potential is short compared to

realization of irrigation potentials. Also, future irrigation waters are still in the Missouri River. The position can be taken that these waters, 4 million acre-feet of them, should be used to fill the reservoirs or produce power in order to better the cash payment features of the Missouri River Basin project. (3) Power supplies will be woefully short of preference customer demands within the marketing area.

If I have not expressed myself understandably, I will be pleased to attempt clarification.

Thank you very much.

The CHAIRMAN. Are there any questions?

Senator O'MAHONEY. Mr. Chairman, I would like to ask the witness a question or two.

First, let me say, Mr. Grimes, that I think you have made a very serious attempt to give a lucid statement which should be understood by all. Nevertheless, it is important to have a completely clear understanding of just what you regard to be the most important use of water in the Missouri Basin system. This question is asked you regardless of existing law.

Mr. GRIMES. Senator O'Mahoney, there is no question, in my opinion, but that the most important use of water in the basin is the human needs, whether it is a municipal water supply or whether it is industry.

Senator O'MAHONEY. Individual human needs.

Mr. GRIMES. Individual human needs.

Senator O'MAHONEY. That in your judgment should obtain complete priority.

Mr. GRIMES. Absolutely. The next most important use of water in the Missouri River Basin in my opinion—and I have to divide the basin when I say this—we speak of the upper basin as being that portion of the basin above Sioux City, Iowa, and in that portion of the basin along the main stem rivers and those areas which will receive their waters from the main stem system, the most important use of water outside of human needs is irrigation water. Other uses of water depend upon where they are used.

Senator O'MAHONEY. May I interrupt you at that point to say that prior to the passage of the act of 1944, before the adoption of the O'Mahoney-Millikin amendment, I appeared before what was then the Commerce Committee having jurisdiction over this whole matter, and all of my argument to that committee was based upon this premise, that the residents of the upper portions of any water basin should not be compelled to see the water of that system flow by their doors, their farms, their communities, without being used in order that a use lower down in the basin should be accomplished. Do you agree with that statement?

Mr. GRIMES. Very, very much so, Senator. We find in our Missouri River Basin that as we go downstream we go to semiarid to humid regions. Under no circumstances in our use of water in this country should we demand or provide in any way, shape, or form that the drier areas of a river basin, including the Missouri, should be called upon to satisfy water supplies in areas that have a greater water supply naturally. The upstream in the Missouri River Basin should have all of their needs satisfied as time goes on before they are called upon to furnish water from their drier area to a wetter area.

Senator O'MAHONEY. Thank you very much.

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The CHAIRMAN. Are there any other questions of this witness? If not, thank you very much for your very important statement.

Mr. GRIMES. Thank you.

The CHAIRMAN. The next witness is A. S. Wendel, Bronson, Iowa, vice president, Midwest Electric Consumers Association.

STATEMENT OF A. S. WENDEL, VICE PRESIDENT, MIDWEST ELECTRIC CONSUMERS ASSOCIATION

Mr. WENDEL. Thank you, Mr. Chairman, members of the committee. First let me apologize for the corrections on my paper. Time did not permit a reprinting of it.

Senator O'MAHONEY. We all have to correct our papers.

Mr. WENDEL. If I had more time I could have had it reprinted perhaps and it would look a little better.

My name is A. S. Wendel. I am a farmer from Bronson, Iowa. I appear today on behalf of the Midwest Electric Consumers Association, of which I am vice president. This is an association composed of 128 rural electric cooperatives and municipalities who are all preference customers in the States of Iowa, Minnesota, North and South Dakota, Nebraska, Wyoming, Colorado, and Montana. Our membership presently represents well over a half million people, and this number is rapidly increasing.

I am also vice president of the Northwest Iowa Power Cooperative of Le Mars, Iowa, and vice president of the Woodbury County Rural Electric Cooperative Association, of Moville, Iowa.

It is with full cognizance of the problems involved that we approach the subject under discussion today. The rapid and ever-increasing demands upon the electrical systems of today are a problem, the solution of which may well tax the ingenuity of the experts. However, we of the Midwest Electric Consumers Association cannot and do not feel that the presently proposed method of allocation of Missouri River power is either fair or equitable, due to inconsistence in manner of approach.

When Missouri River power first became available, or immediately thereto, estimates were made by way of the preference customers in the basin as to their needs in the future and as to what part this new source of power could play. Economics with respect to cost was the controlling factor.

Undoubtedly many of these estimates were on the conservative side due to the realization that the supply would, necessarily, be limited and the demand would exceed the supply. In all fairness to all of the preference customers, unquestionably the minimum usable amount was requested in many cases. In the case of my own rural electric cooperative, I know this was true.

A second factor affecting the original estimate was a fact made publicly known at that time, that as future increased capacity became available, this would be offered to the preference customers on the same basis as the original asking. As approximate dates were known as to when this additional capacity would be available, this was a controlling factor in many of the original estimates and definitely pointed toward conservative approach at that time. It is my studied belief that "consistency is a pearl of great price" and I sin-

cerely believe that a change in basic policy of allocation after one method has been originally agreed upon in advance, after this has been accepted by many as the basis upon which original decisions were made, is both unfair and inequitable.

Certainly no engineer, which I do not claim to be, will agree that additional needs of an electrical system can be accurately determined without due consideration of existing generating capacity available now and in the future. Questions and differences of opinion may well arise as to what constitutes efficient generating capacity and what does not. However, one fact cannot be disregarded—any generating capacity in time of need is far more efficient than none.

I have equipment on my farm which is not operating at peak efficiency because of age, but at the same time, it is more efficient to use it for a time than to replace it at the present. Unquestionably anything being used is not hopelessly inefficient or it would have been replaced.

It appears to me that to ignore existing generating capacity in any system simply because differences of opinion arise as to its efficiency is taking the easy way out with complete disregard to equality in allocation of additional capacity. Surely we have not reached the point in this country that we must admit that our engineers do not know their business and must find some easy, quick, and simple method of solution, regardless of equality involved. If we have reached this point, then perhaps the sputniks in the skies may well be the handwriting on the wall and perhaps we should replace our English courses in our schools with courses in Russian.

It is therefore my urgent plea that the inherent ability available with our technicians be used, that the allocations be made on the basis of need with due consideration to existing generating capacity available in systems now requesting additional power from the river and that the hard, but equitable, method be substituted for the easy way out.

In addition we further believe that no one can better administer the problems of the Missouri Basin than those intimately acquainted with them. We therefore urge the establishment of a management group to control all phases of the basin facilities and arrive at equitable solutions based upon sound management principles. In connection with this, it is only too obvious that efficient use of the power available on the Missouri River can only be obtained by means of an adequate transmission system to bring this power within practical procurement distances of the preference customers. We firmly believe this matter warrants serious study as to the adequacy or inadequacy of the existing transmission system.

Finally, it must be admitted that there are many divergent views about the use and management of the Missouri River. These ideas involve navigation, flood control, recreation, irrigation, power generation, etc. It is only too obvious that the maximum of all these recognized benefits can only be obtained through the proper management of that precious resource—water. There is one method used on practically every other river in the country and has been the means by which the maximum of all benefits has been obtained. I refer to slack-water navigation. We urge that authorization be granted for an immediate engineering study of slack-water navigation on the Missouri River.

In conclusion, may I repeat in summary, the four immediate improvements recommended by the Midwest Electric Consumers Association in the program of the great river basin. They are:

1. A complete readjustment of power allocation to the preference customers, taking into consideration all existing generating capacity within this group.

2. The establishment of a management group which has absolute charge of all of the benefits to be derived from a complete development of the Missouri River Basin.

3. The provision of an adequate transmission system to serve all preference customers in the basin.

4. The establishment of an engineering study of slack-water navigation on the Missouri River.

I thank you for your attention and your kind consideration of these recommendations.

The CHAIRMAN. Are there any questions of this witness?

Senator O'MAHONEY. Mr. Wendel, may I ask you whether you agree with the previous witness that human needs are the prior needs?

Mr. WENDEL. Yes, Senator. If we did not have water we would not have any people there.

Senator O'MAHONEY. Then the first statement in your conclusion which reads, "A complete readjustment of power allocation to the preference customers taking into consideration all existing generating capacity within this group" is not intended to mean that you believe that power allocation should be placed ahead of the human needs of the people living in the basin as the water flows down from the source to the sea.

Mr. WENDEL. No, sir. Senator, our object here is the management of the river. We would not want to take the water away. Human consumption is first anyplace, and irrigation would have to come second. If you did not have crops, you would not have the necessary food.

Senator O'MAHONEY. What is your opinion of this amendment that was written into the act at the time it was passed:

> The use for navigation in connection with the operation and maintenance of such works herein authorized for construction of waters arising in States lying wholly or partly west of the 98th meridian, and shall be only such use as does not conflict with any beneficial consumptive use, present or future. In States lying wholly or partly west of the 98th meridian, of such waters for domestic, municipal, stock water, irrigation, mining or industrial purposes.

Mr. WENDEL. I absolutely agree with that, Senator. I realize, too, that they cannot have this swift-water navigation below Sioux City. In very short time they will not have enough water. I feel by the time they have completed their 9-foot channel there will not be the water to fill the channel. That is why we recommend that slack-water navigation be studied and engineered so that they can use the natural flow of the river and hold the water back where it is going to be needed all along the river, all the way from Montclair down to the coast.

Senator O'MAHONEY. Then you believe that navigation downstream should not be expanded by deepening the channels or widening the channels—probably deepening, particularly—to the detriment of those who live in the upper reaches of the river.

Mr. WENDELL. It is absolutely foolish in my mind. There are two reasons why they can't have that 9-foot channel of swift water. One

is that they won't have the water to fill the channel in another 15 years. The second is that they can't push a payload on that swift water anyway.

Senator O'MAHONEY. There is a limitation on the amount of water that may flow in any stream.

Mr. WENDEL. Certainly.

Senator O'MAHONEY. Of course, that is a self-evident fact.

Mr. WENDELL. Water is getting to be the most precious resource we have in this country. The upper States need the water. If you could have the continuous pools clear from Fort Peck down to be used for irrigation and human consumption, that will be the proper use of the Missouri River in my mind.

Senator O'MAHONEY. What is the new program of allocation which you fear?

Mr. WENDEL. The main thing we were given to believe at Sioux Falls in the meeting in December, we were given 88 percent of the power we were asking for. After the meeting was practically closed, they decided all at once to disregard the generation among the preference customers and cut it back to 85 percent.

Senator O'MAHONEY. Who decided?

Mr. WENDEL. The Interior Department. Mr. Aandahl, I think, got a quick flash that was the thing to do.

Senator O'MAHONEY. Your sentence which I would like to clarify is on page 1 of your statement in the third paragraph. It is the last sentence of the third paragraph.

> However, we of the Midwest Electric Consumers Association cannot and do not feel that the presently proposed method of allocation of Missouri River power is either fair or equitable due to inconsistence in manner of approach.

What is the precise presently proposed method of allocation which you refer to?

Mr. WENDEL. It is just the manner of dividing the power. Originally, when the first Randall Dam power came into effect, we asked for what power we wanted to contract for; most of us held that down to a low figure, knowing that it would not be long until Gavins Point and Garrison and Oahe came in. We knew the dates they were coming along. We were informed at that time that when these came in our allocation would be increased in a like amount and all of the installations were announced. We knew how much power they thought they would have at that time. Everybody kept it down because from Randall Dam there was a limited amount of power. There were a few that contracted for a lot of power but they had to pay an extra cost on the power which they did not use. The majority of the cooperatives and municipalities contracted for the minimum amount they thought they could get along with, knowing when these other plants came into being, they would get an increase of power. That has not come into being. The power has not been increased. Our group in Iowa was granted 4,000 kilowatts of new power.

Senator O'MAHONEY. Your assumption was that for your association you were making your application on the basis of the conditions that existed at the time and the power that would be developed by the works that were in prospect of immediate construction?

Mr. WENDEL. Yes, sir.

Senator O'MAHONEY. You felt certain that as the Missouri Basin project was broadened and new reservoirs were constructed there would be an opportunity to increase the allocation of power.

Mr. WENDEL. Whether it was just that, I am not sure.

Senator O'MAHONEY. In other words, the communities represented by your organization were growing communities and the Missouri Basin project was a growing project. As the communities grew and the project grew, you wanted the communities to share in the use of the power development.

Mr. WENDEL. Yes, sir.

Senator O'MAHONEY. Is that being threatened?

Mr. WENDEL. Yes; if we increase our demand for power and we don't get an increase in river power, we are going to have to look to some other means of getting power.

Senator O'MAHONEY. Is there any present reason for you to feel that with the completion of the other dams you would not get this increased power? You are a preference customer.

Mr. WENDEL. Yes, sir. The way the Iowa group has been cut back at the Sioux Falls meeting, it looks as though we will be held at that point.

Senator O'MAHONEY. You were cut back from what had been allocated to you?

Mr. WENDEL. Not what had been allocated but what had been promised. You could not say it was a positive allocation but it was that we are going to allocate so much power here and that was 88 percent of what they needed at this time, and that was cut back.

Senator O'MAHONEY. Was the promise at the beginning that as the community grew, the population expanded, the irrigation, the livestock business, the domestic municipal uses, and the industrial uses increased and new power was developed in this great new project, you would be permitted to get more power?

Mr. WENDEL. That is what was understood by all of the preference customers. We didn't have anything in writing as to that. That was the understanding that we had. As the new plants came into effect, we would get an increase of power from those.

Senator O'MAHONEY. Was something said at this conference of which you have any record that your right to share in the power which would be produced as the projects were expanded would not be upon this principle of expanding use?

Mr. WENDEL. You mean from our original allocation?

Senator O'MAHONEY. No; I didn't mean that you would go beyond your expanded use, but some other preference might be permitted to come in or some other use might be permitted to come in which would prevent you from expanding in your normal growth as the production of power expanded.

Mr. WENDEL. We didn't have any other thought that as Gavins Point and Garrison and Oahe came in that we would get the power. We were supplied at that time by the one small dam, that is, small compared to the other larger dams, and we thought as the other dams came in—we were given to understand, not in writing, by the Bureau of Reclamation fieldmen—we would get additional power.

Senator O'MAHONEY. What has been said to make you fear that that original principle will not be carried out?

Mr. WENDEL. The first big shock we got was in Sioux Falls on December 11 and 12, when they started to whittle us back on the allocation of power.

Senator O'MAHONEY. How did they do that?

Mr. WENDEL. It was just that they figured that was one way to get along with the power. We would have to take 3 percent off everybody. A lot of the municipals and others have generation of their own. Some of that generation is very poor, little old diesel plants, and some of it is very good. Some of these plants will not operate too long. But they are of some value. The newer, bigger plants are of a tremendous value. It was the understanding there in the last few minutes of the meeting at Sioux Falls that they would cut everybody back 3 percent.

Senator O'MAHONEY. Is this the same Sioux Falls meeting concerning which Mr. Holum testified?

Mr. WENDEL. That is correct. They just disregarded all the generation, which we did not feel was fair. If we are short of power any generation is worth something.

Senator CARROLL. Would the Senator yield for a short question at this point?

Senator O'MAHONEY. Surely.

Senator CARROLL. When you say they took 3 percent off, from whom and for what purpose?

Mr. WENDEL. They took it off everybody. They could not satisfy all the customers at 88 percent of the request, so they whittled it back. We had a list of all of the preference customers and what the 88 percent would allow us. At the end of the meeting in order to satisfy everybody and take up the slack that would be left if you disregarded the generation among the preference customers, they just reduced everybody 3 percent.

Senator CARROLL. The point I want to make is this: If they take 3 percent from the preference customers, how would they dispose of it? Would they dispose of it to somebody else?

Mr. WENDEL. Some preference customer may have some generation. On account of his generation he did not have the original allotment.

Senator CARROLL. I put the question a little differently to see if I understand it. If they reduce the preference customers 3 percent, do they have a surplus to sell to somebody else?

Mr. WENDEL. No. They reduced the overall customers 3 percent, but there are some preference customers that would get increased by disregarding their generation.

Senator O'MAHONEY. It was not the actual allocation that was reduced, but the prospective allocation.

Mr. WENDEL. We thought it was actual because we had been notified that we should have our request in by July. This would be the actual allocation. We met for that purpose, to receive our allocation of power that was available at this time.

Senator O'MAHONEY. That was available at the time of the meeting at Sioux Falls?

Mr. WENDEL. Not then, but a few years hence when Garrison came in and the others.

Senator O'MAHONEY. Let us put it this way: What would be produced as of 1963, for example?

Mr. WENDEL. Not that far ahead.

Senator O'MAHONEY. So it really was looking into the future amount of production of power.

Mr. WENDEL. That is right.

Senator O'MAHONEY. Then was the cutback to which you refer understood by you to mean a cutback of preference power to which these preference customers were entitled below the amount that would actually be available to preference users?

Mr. WENDEL. No; they didn't take the total amount of preference customers away. It was just a reshuffle of the amount of power.

Senator O'MAHONEY. Your purpose in testifying here is to urge upon the Congress the desirability of providing a more adequate transmission system, for example?

Mr. WENDEL. Yes, sir.

Senator O'MAHONEY. So as to distribute the power to the largest possible area of preference customers. Am I right?

Mr. WENDEL. Yes, sir.

Senator O'MAHONEY. You want a readjustment of power allocation to the preference customers. Your purpose in expressing that desire is to make certain that the power which is available will go to the preference customers?

Mr. WENDEL. Yes, sir. On an equitable basis.

Senator O'MAHONEY. Among the preference customers.

Mr. WENDEL. That is right.

Senator O'MAHONEY. Then you want to establish some sort of a management group within the Department of Interior, or where?

Mr. WENDEL. I think that should perhaps be outside. I think that the Senate committees could perhaps frame a bill that would create that group. I don't know what kind of management group you would want. We would be very happy to select one. I think it should be outside of the Department.

Senator O'MAHONEY. I think when Congress was passing the act of 1944 it made the Bureau of Reclamation the marketing system, as I recall. That in a sense was making it the management group.

Mr. WENDEL. That is just to market the power. They don't have anything to say about anything else. They don't know how much water they are going to have.

Senator O'MAHONEY. Do you have any evidence that any other agency, the Corps of Engineers, for example, is telling the Department of Interior how much power will be developed?

Mr. WENDEL. It seems as though they have a team hitched up here that is not pulling together down the road very well.

Senator O'MAHONEY. We want to hitch this team a little better.

Mr. WENDEL. Yes.

Senator O'MAHONEY. We might put a few farmers in charge.

Mr. WENDEL. We have enough trouble without that.

Senator O'MAHONEY. Thank you very much.

The CHAIRMAN. Are there any other questions?

Senator CARROLL. Mr. Chairman, I would like to follow through a little bit so I will understand it more clearly.

Taking your testimony, and also Mr. Holum's testimony, together, you talk about the marketing area in the Missouri Basin and your membership includes rural electric co-ops, municipal systems, and

consumer power districts. Is there any sale of power to private utilities in this area?

Mr. WENDEL. I don't believe there is any firm power sale.

Senator CARROLL. The purpose of my question about this 3 percent, if there is 3 percent reduction in allocation to any of these groups which I have just mentioned, would that increase the sale of power to the private utilities?

Mr. WENDEL. No.

Senator CARROLL. This is not the issue, then?

Mr. WENDEL. No. The private power companies are getting a lot of secondary power, but I don't think they are getting any firm power. They have a little cushion there that they might be selling to them, but it is holding it as a matter of cushion.

Senator CARROLL. Then this 3-percent reduction is a reduction within the preference customers themselves?

Mr. WENDEL. That is right; it is in the family. They have quite a cushion they are holding back in there for safety's sake. They want to sell that power someplace and they perhaps sell that to them.

Senator CARROLL. The reason I ask the question, in Colorado we have in rough terms 20 percent of the sale of power from a multiple-purpose project, preference customer power; and about 80 percent would be sale to private power. If there would be a reduction of a certain percentage against the preference customer, it would perhaps benefit the private power group, and I wanted to know if that is true here.

Mr. WENDEL. No; they are not taking it away from us and giving it to the power group. It is just the cushion.

Senator CARROLL. Thank you very much.

The CHAIRMAN. Thank you very much for your statement.

Mr. WENDEL. Thank you, gentlemen.

The CHAIRMAN. The next witness will be Virgil Hanlon, Madison, S. Dak., manager, East River Power Cooperative.

STATEMENT OF VIRGIL HANLON, MADISON, S. DAK., MANAGER, EAST RIVER POWER COOPERATIVE

Mr. HANLON. My name is V. T. Hanlon; I am manager of the East River Electric Power Cooperative, Madison, S. Dak. East River Electric Power Cooperative is a wholesale power supplier for more than three-fourths of the farmers and ranchers of South Dakota and more than one-third of the population of the State. I am also a director of the Midwest Electric Consumers Association, a member of the Governor's Power Supply Committee, and chairman of the South Dakota Rural Electric Association power supply committee. I am testifying in behalf of East River and of the REA members of the eight-State area included in the Midwest Electric Consumers Association.

East River Electric Power Cooperative's sole supplier of electric power has been the U.S. Bureau of Reclamation. Federal power has not only made rural electrification feasible in the Great Plains area, but has also saved the farmers millions of dollars. Federal power delivered by East River Electric Power Cooperative has cut the cost of wholesale power at least in half. Power consumption is twice what it was 6 years ago.

This winter the East River Electric Power Cooperative exceeded its contract rate of delivery of electric power from the U.S. Bureau of Reclamation. This means that we have to purchase steam generated power. We are now completing negotiations for winter power with the Nebraska Public Power System of Columbus, Nebr. We hope that by purchasing power from Nebraska we will be able to take care of our needs until 1963 when Big Bend and Oahe are scheduled to produce power. Our power shortage problem is typical. Many of the cooperatives in the Missouri Basin are experiencing similar problems—and some of these are more acute than ours.

Recently the U.S. Bureau of Reclamation tentatively sold all of the firm power to be produced upon the completion of all the generators on the main stem dams of the Missouri River—except Big Bend Dam. The delivery of this power will ultimately be made in 1965 at the completion of the main stem reservoirs. When the tentative allocations were made at Sioux Falls, S. Dak., December 9–10, 1958, it was found that the U.S. Bureau of Reclamation had only enough firm power to satisfy 70 percent of the cooperatives' 1965 requirements. Because of this shortage of supply the U.S. Bureau of Reclamation tentatively allocated approximately 85 percent of their 1963 requirements to the preference customers. It is, therefore, apparent that the preference customers in the marketing area of the Missouri Basin are going to have to find 30 percent of their 1965 needs by the purchase or generation of electric power.

Bureau of Reclamation policies make purchasing power impractical and uneconomic by charging for displacement of power.

I would like to interrupt my testimony at this point. I had originally written out an explanation of what I was talking about. When I read it over again it did not sound quite as good. If I could use the map I would like to show you an example of a situation in South Dakota. Here is the reservoir at Gavins Point. This is Fort Randall and Oahe. We are buying power down in Nebraska to be delivered into South Dakota, and our consumers. We are complaining about this fact, that we are using the Bureau of Reclamation system. We buy power from Nebraska. Nebraska is a customer of the Bureau of Reclamation, so under normal conditions power is flowing into Nebraska. As we start buying power from Nebraska, Nebraska actually uses a part that we purchase in their system here, and we use the part that normally should have flowed into Nebraska in this area. That is all right. We call that displacement of power. The thing we are objecting to is that the Bureau of Reclamation charges to wheel this back up here when actually there is no flow of power. They charge us compounded 7 percent losses which will amount to 14 percent losses that are nonexistent to move that up here. By the time you add to 7 or 8 mill power in Nebraska and put a mill wheeling and compound 7 percent losses, which is about 14.5 percent, we pay practically 2.5 mills more for our power to get it into our system. The Bureau system actually has been unloaded giving it more capacity. That is what we have objected to. They do recognize in particular cases of displacement. If it was actually wheeled, we are tickled to pay our mill to wheel it. In this case it is not. It is displaced. It makes less line losses and opens up the system. I give this explanation instead of the one in the testimony.

Senator O'MAHONEY. Would you mind clarifying just a little bit more. By displacement of power, what precisely do you mean?

Mr. HANLON. Actually this power generated here has been sold to Nebraska.

Senator O'MAHONEY. A record is being made here, so you should state the point of the map to which you are pointing. The map does not appear in the record and will not do us much good when we try to study the record. You pointed to a spot on the Missouri River system north of Nebraska, did you not?

Mr. HANLON. That is right, Senator.

Senator O'MAHONEY. Do you wish the committee to understand that at that spot power was available but it was going down into Nebraska?

Mr. HANLON. The sale of it was to go into Nebraska.

Senator O'MAHONEY. It was on its way to Nebraska to be sold there.

Mr. HANLON. Yes.

Senator O'MAHONEY. It was not being transmitted and could not be transmitted east to the area that your organization serves?

Mr. HANLON. That is not quite right. I probably misled you. The power flowing into the system moves all over, but a certain part is being sold to Nebraska, and that is the part I am talking about.

Senator O'MAHONEY. That is what I am trying to get clear in the record. That part goes into Nebraska.

Mr. HANLON. That is right.

Senator O'MAHONEY. But Nebraska having purchased it then resells it to you.

Mr. HANLON. You may look at it that way, but actually they have to start their generators so we are paying for steam-produced power in Nebraska which displaces what they have taken from the Bureau. We do pay them for the steampower, though they might be using hydropower or mixed with steam.

Senator O'MAHONEY. That makes it clear. Is it your testimony that by reason of these facts it costs you more than it would if there had not been a displacement of power?

Mr. HANLON. Yes; the facts show that there has been a displacement, there is no wheeling, and there is nonexistent line losses. We object to the policy of the Department of Interior of saying that is wheeling and charging us for wheeling.

Senator O'MAHONEY. There is no transmission of that power?

Mr. HANLON. That is right.

Senator O'MAHONEY. And therefore there is no cost, but the cost is assessed against you.

Mr. HANLON. That is right.

Senator O'MAHONEY. Thank you.

Mr. HANLON. When we asked the Bureau to change this policy or to give us reasons for it, this is the answer we received:

> All wheeling arrangements entered into by the Bureau, either the Bureau is wheeling power over the system of others or is wheeling power of others over the Bureau's system, have been approached as true wheeling arrangements without regard to the effect of power displacement. The Department does not anticipate that the present policy will be changed.

In most instances, therefore, it is cheaper to generate our own power, but that is hampered by another Bureau policy.

At the same time that the Bureau is faced with a lack of energy it requests that the cooperatives which build steam generation, or contemplate such, operate their plants at their normal load factor, rather than supply energy to the Bureau so it can firm up more energy to be returned to them.

Because the Bureau does not accept any utility responsibility, it does not and will not give us any assurance of having capacity in the Bureau transmission system, making it practically impossible for us to plan generating capacity for the future.

I could go on, but the net effect of all these policies is that they raise the cost of purchased power and tend to discourage, at the least, or make infeasible, at the extreme, construction of our own generation facilities.

The preference customers have expected that there will be a time when the hydropower from the Missouri River dams will no longer meet their needs. What they didn't expect was that out of 1,565,000 kilowatts of generation in the dams in the main stem of the Missouri, that only 990,000 kilowatts could be sold because there was not enough energy to firm the power on the river.

It must be remembered that electric energy and stored water in the reservoirs are the same. If there was enough stored water for winter use there would be enough energy to firm up most of the 600,000 kilowatts of generation that the U.S. Bureau of Reclamation could not sell as firm power.

Machine-capacity generation in the dams without water is the same thing as a generating plant without fuel. So I am comparing the electric energy and stored water as being the same.

Senator O'MAHONEY. Is that sentence exactly the way you want it to read? Let me read it to you:

> If there was enough stored water for winter use.

That means that in your opinion there is not now enough stored water for winter use.

Mr. HANLON. That is correct, sir.

Senator O'MAHONEY. But if there were, and I am quoting you again:

> There would be enough energy to firm up most of the 600,000 kilowatts of generation that the U.S. Bureau of Reclamation could not sell as firm power.

Don't you mean cannot now sell its firm power?

Mr. HANLON. I believe you are correct.

Senator O'MAHONEY. Cannot.

Mr. HANLON. Cannot.

Senator O'MAHONEY. Thank you.

Mr. HANLON. The reason we are testifying today is that we think the American people are being shortchanged under the present system of management of the Missouri Basin. The taxpayers are being shortchanged because the payout status of the Missouri Basin is jeopardized when 600,000 kilowatts of residual power commodities are left unfirmed. This nonfirmed power then must be sold at discount rates.

It is the firm power sales by the Bureau of Reclamation that will reimburse the Government for the major cost of the dams, including the cost of irrigation, fish, and wildlife, etc. We believe the coopera-

tives in the Upper Missouri Basin States are also being shortchanged because they are being denied 600,000 kilowatts of machine capacity which, when firmed up, would give the preference customers more than 100 percent of their 1965 needs rather than the present 70 percent.

We believe Congress can correct this situation for the good of the Government, the American taxpayers and the power users. First, we made some conclusive statements in the joint hearings before the Senate Committees on Interior and Insular Affairs and Public Works on May 1 and 2, 1957. At this time we pointed out that the Corps of Army Engineers and the U.S. Bureau of Reclamation, by agreeing with the Army, have violated the O'Mahoney-Millikin amendment of the Flood Control Act of 1944. We pointed out that they were violating the Flood Control Act of 1944 in giving priority to navigation. They continued to give priority in the use of water to navigation over that of the manufacture of electricity for those States lying wholly or partially west of the 98th meridian.

At that point, Senator O'Mahoney, I would like to point out that this is still in direct violation of the interpretation you made a year ago when you included the manufacture of electricity for industrial uses, as written in your amendment.

Senator O'MAHONEY. There was nothing to indicate that power as a fuel to motivate industrial use was any different from oil, or any other motive power. Electric power was contemplated by Senator Millikin and myself as part of the industrial use that could be made by the residents of the upper basin States.

Mr. HANLON. We certainly have blessed you many times for that amendment.

Senator O'MAHONEY. I need it.

Mr. HANLON. We want you to understand that we have no quarrel with navigation or the navigation interests who contribute nothing to the costs of the basin program. We insist, however, that water needed so badly upstream should not be wasted at a cost to the people. If there is not enough water for free-flowing navigation, then the only answer is slack-water navigation.

Again I want to interrupt my testimony. A few nights back I was trying to figure out how much water was being wasted in our interpretation by free-flowing navigation. The Army during the summertime during the 7 months of navigation have released 30,000 to 35,000 second-feet of water. For sanitation and health purpose and normal uses, they would probably need 10,000.

But giving them the benefit of the doubt, that only 15,000 cubic feet per second was being wasted, I tried to figure out how much water that would amount to. Doing some slide-rule-work computations I found out that it would fill a channel 200 feet wide and 10 feet deep, a foot deeper than the Army is after now. It would be able to fill a channel from Sioux City to Kansas City in 2½ days. It would fill a channel from Kansas City to St. Louis in 4½ days. It would fill another channel from San Francisco to New York City in 24 days. In the 7 months that they have navigation, wasting 15,000 second-feet, you could flood a channel completely around the world. That is a lot of water. South Dakota, as some of the other witnesses have testified, needs a lot of water.

Congress should not permit the Army Engineers to continue to ignore the O'Mahoney-Millikin amendment. The taxpayers and the ratepayers are entitled to have the 600,000 kilowatts of hydro-machine capacity firmed up with thermogeneration. If we are not to have enough water we urge the Congress to provide funds immediately so that the U.S. Bureau of Reclamation can build efficient steam generation plants to firm up the nonfirm power. We suggest also that the use of experimental nuclear reactors for the same purpose be considered.

The U.S. Bureau of Reclamation can efficiently operate steam generation. Thermoplants operated at a high-load factor could put energy into the Bureau transmission system. This energy could take the place of the badly needed water. Therefore, I respectfully submit the following as a program that Congress should inaugurate as soon as possible, to protect the investment the Government has made in the basin and to keep faith with the electric consumers who are paying for the major portion of the reimbursable features of this development.

1. Enforce the O'Mahoney-Millikin amendment of the Flood Control Act of 1944, and thereby strip the Corps of Army Engineers of their assumed, unlawful control of the Missouri River waters.
2. Initiate a study of the feasibility of slack-water navigation.
3. Authorize and appropriate funds for thermogenerating plants to firm up to 600,000 kilowatts of nonfirm power. Also investigate the possibilities of the Government building experimental nuclear-generating plants.
4. Request that the "Adequacy of Flow Report of 1951" be restudied with the consideration of the true intent of the O'Mahoney-Millikin amendment.
5. Request the U.S. Bureau of Reclamation to buy low-cost excess energy from present and future generating plants in the basin.
6. Appropriate adequate funds to complete the dams on the main stem of the Missouri River as soon as possible.

I want to add a seventh one in there because since coming to Washington I have had a chance to read Senate Resolution 71 that Senators Murray, Neuberger, and Carroll introduced, and I think that is going to take care of many, many of the things that we have to assume. Let us get the facts, and then we will be able to study the whole program. We certainly respect that resolution a great deal.

The CHAIRMAN. Thank you very much for your commendation.

Senator O'MAHONEY. Have you given any consideration to the gross production that would come from the rapid building of these systems? Would it increase the income of the people who inhabit these areas?

Mr. HANLON. Definitely. Cheap electric energy in the basin raises the standard of living of all of our farmers and the economy.

Senator O'MAHONEY. Do you have any specific facts to tell us now what the development of the Missouri Basin in the production of power so far has achieved in raising the standard of living of the people?

Mr. HANLON. I might have to review a little bit. Back prior to the Flood Control Act of 1944, outside of a few eastern cooperatives, REA could not make loans in South Dakota because of the high cost of power. It was ranging from 12 to 20 mills for wholesale power,

thereby taking out feasibility of loans that REA was trying to make in the Dakotas.

After the Flood Control Act—and we had the promise of cheap hydropower—we started having our first development of rural electrification. I would say probably 80 percent of it has been developed since the war, and it has been because of the Missouri Basin. I would say we would not have electricity to the ranchers in most of South Dakota, if it had not been for the development of the river. We certainly appreciate that.

Senator O'MAHONEY. In view of the fact that I presented to the Senate the Missouri Basin project as a Senate document—the one which is used by all who are working with the problem now—I am anxious to find out what contribution this has made to raising the standard of living throughout this area. Your testimony is that it has produced a very great increase; am I right?

Mr. HANLON. You are certainly right. I don't think I would be able to furnish statistical information.

Senator O'MAHONEY. Has the population of that area increased?

Mr. HANLON. Let us say it has held constant. It was drifting out of our State.

Senator O'MAHONEY. In South Dakota, you mean?

Mr. HANLON. Yes. I have to testify for South Dakota.

Senator O'MAHONEY. Yes; of course. South Dakota has benefited by reason of the use of this water.

Mr. HANLON. It certainly has. I am testifying only about the rural electric cooperatives, but all of our municipal systems have benefited.

I might say it has not only benefited the cooperatives, the preference users, but all of our power companies during the summertime are taking this cheap dump power and dropping all their generation loads so that practically every consumer at times of the year is receiving hydropower. During the 7 months of navigation season—I don't think I would be too far wrong—95 percent of our consumers receive power from the Missouri River. So you can see it is benefiting all of us.

Senator O'MAHONEY. Then let me ask you the question, has it been of economic aid to this area?

Mr. HANLON. Greatly; yes. I would like to supply dollars, but I can't.

Senator O'MAHONEY. Of course, you cannot do that offhand. Perhaps you might be able to check over the figures which come to you through your co-op and file a statement with the committee.

Mr. HANLON. For our member cooperatives in 1957, and I have not checked the 1958 figures, in wholesale power costs we saved our cooperative $1,500,000. Those are round figures, but those are close; would that suffice? We have made that study. We have not checked 1958.

Senator CARROLL. Mr. Hanlon, on page 4 of your statement you say the taxpayers are being shortchanged because the payout status of the Missouri Basin is jeopardized when 600,000 kilowatts of power are left unfirm. Then in response to a question by Senator O'Mahoney, you say that the private power companies have profited because they get the cheap power in the summertime. This 600,000 that is unfirmed is cheap power, is it not? Is that the part of it that goes to private power companies in the summertime?

Mr. HANLON. Yes; most of that, eventually. They do not have that installed now.

Senator CARROLL. In other words, that nonfirm power must be sold, according to your statement here, at discount prices.

Mr. HANLON. That is right.

Senator CARROLL. And this is why you think there is a sort of shortchanging project?

Mr. HANLON. That is right.

Senator CARROLL. I want you to think about this a little bit. If you have not studied it, don't comment on it. Do you think there is a deliberate policy on the part of the Bureau of Reclamation or any other Government agency to keep from firming up power so that they can sell cheap dump power? Have you thought about that?

Mr. HANLON. Many times I have thought of it. I would hate to try to document it.

Senator CARROLL. Has this ever been discussed in open hearing with the Bureau? Has the question ever been put to the Bureau by your groups?

Mr. HANLON. I would actually say it should be discussed more not with the Bureau so much as with the Corps of Engineers who make the water situation such as it is.

Senator CARROLL. This is what we run into then when we talk about divided responsibility.

Mr. HANLON. That is right.

Senator CARROLL. One area has the responsibility to market power and there may be another agency of the Government that has the power to interfere with that.

Mr. HANLON. Through the control of water, yes.

Senator CARROLL. I make this observation, not as a conviction. I am asking a question because this is the purpose, it seems to me, Mr. Chairman, of the resolution that we are offering to the Congress, to find out about these things. If the taxpayers are being shortchanged—and I certainly make no assertion that there is any hidden motive for having this nonfirm power—it is a matter that the Congress ought to look into.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. HANLON. Thank you very much.

The CHAIRMAN. The next witness will be Henry Swenson, Columbus, N. Dak., chairman of the board, Upper Missouri G. & T. Electric Cooperative.

STATEMENT OF HENRY T. SWENSON, PRESIDENT, BURKE-DIVIDE ELECTRIC COOPERATIVE, AND PRESIDENT, UPPER MISSOURI G. & T. ELECTRIC COOPERATIVE

Mr. SWENSON. Mr. Chairman, Senators, my name is Henry T. Swenson. I am president of the Burke-Divide Electric Cooperative of Columbus, N. Dak., an electric distribution cooperative. I am also president of Upper Missouri G. & T. Electric Cooperative with headquarters at Sidney, Mont. This G. & T. is a group of 13 distribution cooperatives in eastern Montana and northwest North Dakota, and also includes the municipality of Mandan, N. Dak. I am a farmer

from northwest North Dakota, having been associated with rural electric cooperatives since 1945. I am testifying before the committee in behalf of Upper Missouri G. & T. Electric Cooperative.

When the power marketing criteria of the Missouri Basin were being formulated we were led to believe by the Bureau of Reclamation that there would be enough hydropower developed to take care of the needs of the preference customers of the drainage area of the Missouri River Basin. In so doing we considered that the Bureau of Reclamation assumed a responsibility to serve the area with all power needs at postage stamp rates and they proceeded to build transmission lines to do so.

Our engineers, having reviewed the historical power-marketing situation, have found and reported to us, "The extensive use of power marketing criteria" developed by executive agencies of the Federal Government was used to bridge the gap or deficiencies in existing Federal legislation regulating the sale of Missouri Basin power.

Senator CARROLL. Mr. Chairman, I have a very important meeting this afternoon, and I may not be with this group, but I want to pay my respects to them for coming all the way in here to testify. We will read all you say in the record, and this will be going on, I think, tomorrow.

The CHAIRMAN. Yes, and Monday.

Senator CARROLL. Will you accept my apology? I am sorry I cannot be with you.

Mr. SWENSON. That is perfectly all right, Senator. Thank you.

The 1954 allocations of power were based on the September 1953 criteria, which were modified by the Department of the Interior after public hearing, and we presumed, of course, that such criteria would be used in the future. However, the recent allocations were made upon a criterion which was not available to us except by oral explanation given to us at a recent Sioux Falls, S. Dak., meeting sponsored by the Department of the Interior.

It is well understood that the very nature of power supply requires long-range planning. Under the system that now prevails, it is impossible for us to do any constructive planning. For example, whereas all preference customers expected a 100 percent supply through at least 1965, they find that they will not now have better than 85 percent of their requirements in 1963. Under this development, they do not have a reasonable amount of time to adjust to the situation with respect to power planning and making arrangements for power.

Our engineers, R. W. Beck & Associates, Seattle, Wash., and Columbus, Nebr., after making a thorough study of the Missouri Basin power problems, report that "the power marketing policies of the Bureau of Reclamation have not in the past and do not now provide for a supply of firm power for the preference customers with which to meet their future power requirements on a scheduled and orderly basis."

Under the prevailing conditions as developed from the power allocations discussed at the Sioux Falls meeting, more than 200 preference customers of the basin must proceed individually to purchase by 1963, 15 percent of their power requirements elsewhere, a most difficult and unfortunate situation that shows lack of planning.

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One possible solution for our problem would be that the Bureau of Reclamation undertake to purchase firming energy from available sources and arrange to deliver 100 percent of the firm power requirements of the preference customers now under contract through 1968 and then proceed immediately to build a transmission grid in the basin with sufficient capacity so that thermal generation could firm up the residual power from the Missouri Basin hydroplants and deliver the firmed-up power to the preference customers in the basin to points where it is needed.

For a long-range solution beyond 1963, the Bureau of Reclamation would find it in the public interest to lay plans whereby all of the residual power components of the Missouri Basin system can be developed for most economic use within the Missouri River drainage area. In this manner the development of the basin, as was envisioned under the Pick-Sloan plan and the O'Mahoney-Millikin amendment to the Flood Control Act of 1944, could be realized.

It is desired by the Upper Missouri G. & T., that the integrity and financial success of the Federal transmission grid not only be preserved but also be expanded. The basic transmission grid as it now exists is a most valuable tool in the basin. However, it is not yet adequate nor available under proper contractual arrangement to develop and deliver large blocks of power, whether hydro or steam generated, at lowest cost. Also, I am sure greater financial return to the Federal Government will be achieved when arrangements to strengthen the Federal transmission grid and complete adequate arrangements for firming residual power are made. Because of the widespread interest in irrigation, the increased revenue that could accrue to the Government would help build the basin account, which, in turn, would help assist irrigation development.

We inquired of our engineers if they knew of any example or precedent whereby the integrity of the Missouri Basin grid could be preserved under an orderly program of expansion. They answered:

> In order to preserve the integrity of the Bonneville transmission network, which serves as a basic power grid for the entire area (of the Pacific Northwest), Bonneville has secured appropriations from Congress to build new transmission facilities for the specific purpose of wheeling non-Federal power. This arrangement was met with general acceptance throughout the Northwest. It is expected that the arrangement will be continued.

In our judgment, there is no reason why the same plan of development discussed by our engineers could not successfully and most easily be applied to the Missouri Basin development. The Missouri Basin has an abundance of low-cost lignite fuel located in eastern Montana and western North Dakota which, if properly developed and integrated with hydro, through an adequate transmission grid over the entire basin, will furnish an ever-continuing supply of low-cost power. The first phase of power development in the Missouri Basin was achieved with hydroelectric power which has been a great economic stimulus to the basin. This has been especially valuable to our G. & T. members as they attempted to achieve area coverage. From now on, parties agree that the continuing and every increasing powerload must be carried by thermal generation. Let us not permit the lack of planning of inadequate Federal legislation to stand in the way of an orderly development of the important resources of the Missouri River Basin.

In closing, it has been a privilege to appear before this committee and present what we consider constructive views on this pending power problem. We look to your leadership in the development of a sound course of action for an expanding power supply with which to continue the job of laying a firm foundation for sound economic development of the Missouri Basin.

With your permission, Senator, I would like to place in the record the resolution which was unanimously adopted yesterday at the annual business meeting of the National Rural Electric Cooperative Associations held in Washington, D.C., which supports all of the views that I have expressed in my testimony. I would like to have it placed in the record.

The CHAIRMAN. It will be carried in the record at this point in your testimony.

(The resolution referred to follows:)

RESOLUTION NO. I–2 OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION RE MISSOURI RIVER BASIN

Whereas the great need for additional electric power and energy for the Missouri River Basin was proved beyond doubt by the recent allocation of only 85 percent of the 1963 estimated needs of the preference customers by the Department of the Interior, which will furnish an even smaller percentage of their needs in later years; and

Whereas it has been demonstrated that the interconnection of the hydroelectric projects in the Missouri River Basin by the Government and the construction of thermal generating plants to firm up the residual power will greatly increase the firm power capabilities of the Missouri River Basin: Now, therefore, be it

Resolved, That we urge the Congress to appropriate money for, and direct the Department of the Interior to construct the necessary transmission grid to facilitate firming the residual power with thermal generation and thereby make the maximum use of hydroelectric power potential of the Missouri River Basin, as well as make possible its equitable distribtuion to the preference customers in the basin.

Mr. SWENSON. In addition I felt this was so important to our interests that I would like to express our wholehearted endorsement of Senate Resolution No. 71 introduced by Senators Murray, Carroll, and Neuberger, and thank you for this opportunity to appear before you.

The CHAIRMAN. Thank you for your very fine statement.

We have a great many witnesses here, and that is one reason why I don't like to prolong it by asking a lot of questions. I think the testimony that has been submitted is very clearly understandable, and we should have no difficulty in working out a program. I want to thank you very much for your statement here this morning.

Are there any other questions from any other Senators? If not, thank you.

Mr. SWENSON. Thank you, sir.

The CHAIRMAN. We will take a recess now until 1:30.

(Thereupon at 12:25 p.m., a recess was taken until 1:30 p.m., the same day.)

AFTERNOON SESSION

The CHAIRMAN. The hearing will come to order, please.

The first witness this afternoon is Mr. S. A. Forseth, Williston, N. Dak., manager of the Williams County Electric Cooperative.

STATEMENT OF S. A. FORSETH, MANAGER, WILLIAMS COUNTY ELECTRIC COOPERATIVE, WILLISTON, N. DAK.

Mr. FORSETH. Mr. Chairman, my name is S. A. Forseth. I am manager of the Williams Electric Cooperative, Inc., of Williston, N. Dak. Our cooperative serves substantially all of rural Williams County, but we serve no towns or villages since they were already served by the local private utility company prior to the organizing of REA in our community. We operate at present 1,339 miles of electric distribution lines and serve 1,396 consumers through a total of 1,466 meters. Of these consumers, 1,262 are farms, 75 are schools, churches, and halls, 114 are small commercials and 15 are large commercial installations. This substantially provides service to every rural resident in our project area, who desires service and this complete coverage has been accomplished under REA's basic principle of area coverage.

There are 20 other rural electric cooperative projects operating in the State of North Dakota, and while most of them are somewhat larger in membership there are still many of them having approximately the same density of customers per mile that we have and all the cooperatives in our State have very similar problems.

The Williams Electric Cooperative was organized and incorporated in 1944 and we were notified that our first loan of $400,000 had been approved in the summer of 1945. Prior to this time it had been impossible to obtain rural electricity in our part of North Dakota because the private power companies were not at all interested in providing such power in our sparsely settled area and because REA up until this time had followed policies of approving REA loans in areas of much more densely concentrated populations.

I will cite a typical example of the private utility companies' lack of interest in providing rural electricity. My own father-in-law and his family lived on a tract of land just 1 mile outside of the city limits of Williston. He also had five neighbors living on similar tracts adjoining him. He and his five neighbors attempted to get the private power company serving Williston to extend 1 mile of line to provide their six homes with electricity. They were advised that the only way this could be done would be if everyone of the six residents in their area paid in $800 apiece to the power company in order to get his line constructed. This cost made it prohibitive for them to obtain electricity so therefore they got along with the kerosene lantern until the REA provided them with power in 1947. I could enumerate many more similar cases.

The CHAIRMAN. That same situation has occurred all over the country.

Mr. FORSETH. That is correct.

The CHAIRMAN. After the local people did organize and start to get customers they tried to horn in and take the customers away from them.

Mr. FORSETH. We have had that experience in our particular cooperative even to the extent that we had an agreement between us and our private power company as to who was to serve which area. They built across the line into territory that they had assigned to us for service and took one of the big industrial loads that developed

well within our service area. We wound up in court fighting over that and just yesterday I received a telegram from our attorneys at home that although the Federal court in our State had found in our favor just a year ago and awarded us a substantial sum of damages, the circuit court of appeals had yesterday reversed the decision. I don't know any further details about it, but we are familiar with the thing you are talking about.

The CHAIRMAN. Thank you very much for that statement.

You may proceed.

Mr. FORSETH. Because of our rural population's inability to obtain electric service from the then existing private power company, they organized the Williams Electric Cooperative in an effort to provide themselves with electric service and in the fall of 1946 the first REA powerline poles were planted in the soil of Williams County. By this time the concept of complete area coverage had been adopted by the REA, and three basic factors made this area coverage concept possible. They are, first, the development of an abundant supply of very low cost hydropower from the Missouri River to be made available to all proposed rural electric projects such as ours and to other preference customers. Second, the adoption of a 2-percent interest rate on REA loans. Third, the availability of these 2-percent loans from the Federal Government over a 35-year-amortization period.

All three of these basic principles were essential in order to determine the economic feasibility of providing rural electric service to the rural people not only in our project area, but in many, many, other sparsely settled areas throughout our country as well. If Congress had not had the prudent wisdom to make these three basic principles of low cost power, low interest rates, and a long-term amortization period available, our cooperative and many others like us would never have been able to establish the necessary feasibility to enable us to obtain REA loans and our rural people would still be using the lantern instead of enjoying the benefits of electric power on their farms.

Our cooperative entered into agreements with the REA that on the basis of the aforementioned three basic principles, we would provide area coverage service on our projects. This meant that we would not just skim the cream of any given territory, but that we would extend our lines 2 and 3 miles if necessary across the hill to the fellow living more distant from his neighbors, thus leaving nobody unserved. With this understanding we proceeded with our complete area coverage building program, and we had faith in the Federal Government that it would continue to stand behind us with this same type of loan and low cost power supply.

Until quite recently we have had no reason to doubt this. REA loans on the basis of 2 percent and 35 years were made year after year in increasing amounts for the expansion of rural electricity and the public press even less than a year ago carried headlines and stories such as the one I have in my hand which is a clipping from the Minneapolis Tribune of a story by Tribune staff writer, Frank Wright, with the black headlines, "Surplus of Missouri Basin Power Forecast."

This is what I refer to.

The CHAIRMAN. Do you wish to put that in the record?

Mr. FORSETH. I had not intended to do so, but if you think it would be of help I could do that. The headline is the thing that I particu-

larly wanted to call attention to, "Surplus of Missouri Basin Power Forecast."

The CHAIRMAN. Will you give the substance of what the editorial covers?

Mr. FORSETH. Electric power users in the 10-State Missouri River region on Thursday received welcome news from the Missouri Inter-Agency Committee and it goes on to say that this surplus of power is available.

The CHAIRMAN. Thank you very much.

Mr. FORSETH. However, in recent months this faith of ours has been shaken to its foundation by several very disturbing developments. Many people in high places are making recommendations, submitting proposals, and introducing legislation which would depart from the established policy of the 2-percent interest rate and 35-year loans from REA to meet our financial requirements. We have been informed by the Department of Interior that of our most recent power applications for increased power supplies, we will not be allocated anywhere near the amount of power we applied for.

Our cooperative recently applied to the Bureau of Reclamation for 8,755 kilowatts of power. The most recent information we have been able to obtain from the Bureau indicates that now anticipate allocating us not 8,755 kilowatts but something less than 3,300 kilowatts. We understand that the ultimate amount of firm hydropower to be made available to all preference customers from the entire Missouri Basin Federal hydro installations will be only in the neighborhood of 1 million kilowatts whereas the rated capacity of the generators at all the Missouri River hydro installations will be nearly 2 million kilowatts.

I respectfully submit to you, gentlemen, that the entire question of handling, storing, and releases of Missouri River waters from all the main-stem Missouri dams should be thoroughly investigated with the view toward determining whether or not more prudent handling of this water would result in the utilization of a greater percentage of this installed generating capacity for constant firm power which would not only serve to relieve the impending power shortage in our Missouri River Valley, but would also, because of the greater prices at which this additional firm power can be sold as compared to dump power rates, would bring in hundreds of thousands of dollars additional revenue to the Government.

I also respectfully submit that you gentlemen should thoroughly investigate the advisability of having the Federal Government install thermal-generating plants in our Missouri River Valley to firm up the entire installed capacity at the dams and operate the entire combined system so that the total power output could be sold as firm power. North Dakota alone is reported to have 350 billion tons of lignite coal and it is my belief that your investigation would find that such combined hydro- and thermal-generating system would be feasible, practicable, and very desirable. It would provide an ample source of low-cost power for decades to come. It would provide increased revenues to the Government by selling all power at firm power rates that would not only rapidly repay the cost of the investment but would additionally supply revenues which could be allocated to underwrite a very large portion of the costs of irrigation projects

now in the planning and development stages involving hundreds of thousands of acres of land.

In addition, this ample supply of low-cost power would attract large, new, industrial developments in the Missouri Valley just as experience has shown that it did in the Pacific Northwest, and in the TVA region. Aside from benefiting our Missouri Valley immensely this would also be desirable from a defense standpoint of decentralization of major industrial plants. It would also result in huge benfits in our Nation from the increased national product and increased tax revenues from these industries. The charge may be made that we are asking the Government to subsidize our rural population through a Federal power development program such as I have suggested here.

I admit that we are vitally interested, nay, in fact, I contend our future existence depends upon an additional source of low-cost power, yet I contend most vigorously that such a power development program would in no wise be a subsidy to our farmers or our REA cooperatives. This program would not only be self-liquidating, it would show a handsome return to the Government on its investment, and even if such charges of subsidy were true, the cold facts are that subsidies of one form or another have been a common practice in our Government for generations and publicity of recent years to the contrary, the American farmer has certainly not been the only one guilty of receiving such subsidies. Capper's Farmer for December presented some revealing figures on subsidies received by shipping, the petroleum industry, housing, airlines, and others. The magazine stated:

> **In the past 50 years, for every $1,000 this country has spent for subsidies, the American farmer has received only $5.**

In summarizing, I would like to point out this, that our cooperative and many others like ours on these western prairies are operating successfully at the present time solely because of our 10-watt cost power supplied us by the Bureau of Reclamation and because of low-interest bearing, long-term loans. On the basis of this we have built up REA systems which have helped bring the blessing of electric service to over 95 percent of the Nation's rural people. These systems have a record of repayment of their loans, both principal and interest, which you all know is amazingly good. These system should have all reasonable assurance that they will be permitted to continue their operation on this basis and be enabled to continue expanding their capacities as farmers expand their consumption of electric power year by year.

On one of our system substations serving 500 consumers and with no appreciable increase in the number of consumers our kilowatt-hour consumption increased by 27½ percent from December 1957 to December 1958. In our 12 years of operating, this constant annual increase in load has become an established pattern and I am sure our loads are going to continue to grow for years into the future. Electricity has become as much a necessity on our North Dakota farms as drinking water, or gasoline for the tractor, or seed for the fields. It is therefore imperative that any measures that would hamstring or ruin the REA program must be vigorously opposed while, in the other hand, meas-

ures that will safeguard and strengthen and improve the REA program must be vigorously supported.

I respectfully urge the honorable members of this committee to most thoroughly investigate and study not only the few points I have attempted to bring out in this brief statement but the whole operations of existing and potential Federal developments in the Missouri River Basin and to study the present methods of handling, distributing, allocating, and releasing both the power and water sources of our Missouri River Basin. Perhaps you may determine that a new form of administration will be desirable and if so I believe you will find that the Congress had something like this in mind when they used the following language in the original Fort Peck Act. I quote:

> Title 16, section 833–833A. The form of administration herein established for the Fort Peck project is intended to be provisional pending the establishment of a permanent administration for Fort Peck and other projects in the Missouri River Basin (May 18, 1938, ch. 250, sec. 2, 52 Stat. 404).

For more than 20 years now the U.S. Congress has dealt with our REA cooperatives in a fairminded and equitable manner. I have all the faith in the world that the present Congress will do no less.

The CHAIRMAN. Thank you very much.

I was very much interested in your statement, having a discussion on the proposition that this is a subsidy, the other day. I am very glad to have your testimony.

Mr. FORSETH. I might also add this: I noticed this forenoon that there were several questions from some of the Senators in regard to source material for some of our statements, and I would like to point out that some of the source material would be found in the study of Possible Disposition of Missouri River Basin Project Firm Power, Eastern Division, Eastern area, which was drafted November 14, 1958, and distributed by the Bureau of Reclamation through Secretary Aandahl's staff at the Sioux Falls meeting. This is a study of the proposed allocations. There was also some other reference made in regard to the control of the sale of power by one agency and the control of the releases of water and the generation of power by another department that are not too dependent upon one another. The Summary Report of Operations of Missouri River Main Stem Reservoirs for 1958 and 1959 by Gen. R. J. Pafford, Jr., in a statement given by him before a group on October 15, 1958, at Bismarck, N. Dak., contains information that is quite informative in regard to the releases of the water.

One of the things I would like briefly to point out there is a chart showing the flow at Sioux City that for the winter months when peak power is required the releases are down to about 6,000 to 8,000 cubic feet per second, and for the summer months when we have our valley as far as power requirements are concerned, about 30,000 cubic feet per second throughout the entire summer navigation season. If that were leveled out somewhat, I think there would be adequate power for everybody and the slack-water navigation channel is perhaps the answer to the problem for the navigation industry.

The CHAIRMAN. It seems to me it would be very proper to have those included in the record, if you have no objection. I would be glad to do that.

Mr. FORSETH. I will be happy to do it.

The CHAIRMAN. Without objection it will be inserted in the record at this point.

(The information referred to follows:)

SUMMARY REPORT, OPERATION OF MISSOURI RIVER MAIN STEM RESERVOIRS, 1958–59

(By R. J. Pafford, Jr., Chief, Reservoir Control Center, U.S. Army Engineer Division, Missouri River, October 14, 1958, at Bismarck, N. Dak.)

INTRODUCTION

If the Missouri River were a well-behaved stream with a predictable pattern of runoff and seasonal flows, my report today would be considerably more simple and uncomplicated.

If the 1958 runoff had been up to average, the operation problems on the main stem Missouri River reservoirs would have been less complex, and my presentation more rosy in tone.

But the facts are that our big river is anything but predictable, as you well know. Its perverse nature is being demonstrated in 1958 by a deficit of about 8½ million acre-feet of water below the longtime average of 25 million acre-feet above Sioux City, Iowa.

Consequently, the operation of the main-stem reservoir system has been on what might be termed a "rationing" basis during the current summer season of high demand for water use.

In spite of this handicap in runoff volume, 1958 has seen a continued expansion of multiple-purpose services from the main-stem reservoirs. This was accomplished with the larger storage reservoirs still only about halfway up to their operating pool-storage capacity.

The flexibility of reservoir operation was demonstrated in August by manipulation of the river's flow for successful closure of the Oahe Dam. This was done without any interference with normal use of the river upstream from Garrison Dam or downstream from Fort Randall.

Now, with a small-pool operational at Oahe, the four reservoirs previously in operation can adjust their functions to provide further improvements in system regulation. This permits better flood control, more firm power, and a longer navigation season, than has been possible in preceding years.

A key factor in equitable adjustment of the main stem reservoir system functions has been the sound and effective policy guidance provided by the Coordinating Commitee on Missouri River Main Stem Reservoir Operations. The Committee has performed an outstanding public service in establishing operating schedules fully in accord with the original basic concept of multiple-purpose development and full utilization of the water resources of the Missouri River for public benefits all along this major river.

ACTIONS OF COORDINATING COMMITTEE

The Coordinating Committee on Missouri River Main Stem Reservoir Operations has continued as a vital factor in the effectiveness of operation of the main stem reservoir system. The Committee has given careful attention to main stem water management, and is effectively coordinating the diverse opinions and viewpoints of its individual members into specific operating plans.

The Committee has been expanded since my report to you last year by addition of representatives of Colorado and Wyoming. The Governors of these States have designated the State engineers as their representatives on the Committee. Thus, the Coordinating Committee now consists of representatives of nine States and seven Federal agencies.

On April 29, 1958, the Coordinating Committee held a special public meeting to obtain the views of affected interests on the best methods of operating the Missouri River main stem reservoirs in the 1958–59 period. This initiated a new plan to broaden opportunities for obtaining public views on the control and regulation of water stored on the main stem. The public meeting was attended by about 110 people, with 32 representatives of organizations in Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, and Missouri presenting their views for consideration of the Committee. Presentations were made on a State-by-State basis, with equal time allotments for each State. The next day, on April 30, 1958, the Coordinating Committee held a technical work-

ing meeting for further discussions of details pertaining to operational objectives which the Committee members wanted the Reservoir Control Center to consider in drafting up tentative plans for 1958–59 operations.

The complete record of the April 29 public meeting was studied carefully by the Committee during the summer months, prior to agreement on specific operating plan schedules for the 1958–59 period. Also, the Committee prepared a special report setting forth its views on all points raised at the public meeting. At the Committee's direction, I have mailed a copy of this report to those who attended the April 29 public meeting, and am appending copies to this paper.

With the guidance from the earlier meetings of the Coordinating Committee, the Reservoir Control Center prepared a tentative 1958–59 operating program, based on August 1, 1958 conditions. This tentative program was furnished to the Coordinating Committee members early in September, and with minor modifications was adopted at the Committee's September 18, 1958, meeting.

The Committee plans to hold another public meeting in April 1959, to obtain the views of affected interests on the best methods of operating the Missouri River reservoirs in the 1959–60 period. The exact date of the meeting will be announced in early March 1959. As in the case of the April 1958 public meeting, local interests should make arrangements for presentations in advance of the April 1959 meeting, through the appropriate State representatives on the Coordinating Committee.

DETAILED REPORT ON 1957–59 OPERATIONS

Detailed information concerning actual and proposed operation of the Missouri River main stem reservoirs during the period from August 1957 through 1959 is contained in the August 1958 report on "Summary of Actual 1957–58 Operations and Annual Operating Plan for 1958–59," copies of which have already been furnished to the members of the Missouri Basin Interagency Committee. Additional copies of the report may be obtained from the Reservoir Control Center, Post Office Box 1216, Omaha, Nebr.

The current annual operating plan report, as in the case of previous annual reports, presents pertinent information on water supply conditions and operational requirements, and outlines schedules of storage and releases for the main stem reservoirs through calendar year 1959 which, in the opinion of the Coordinating Committee, provide for optimum regulation of the available water supply to meet water demands and operational requirements as appraised in August 1958. These operating schedules will be followed by the Reservoir Control Center in detailed scheduling of actual water and power operations of the main stem reservoirs until superseded by next year's projection of operations on the basis of August 1959 conditions; except that if substantially changed conditions should develop in the interim, revision of the current operating plan will be considered by the Coordinating Committee in April 1959.

Information from the detailed operating plan report for 1957–59 is summarized in the remainder of this paper.

WATER SUPPLY IN 1958 AND 1959

The year 1958 has been one of marked contrasts of runoff into the Missouri River. The water supply from the Missouri Basin above Sioux City has been decidedly subnormal, while the lower basin area has experienced high runoff and frequent floods.

In the basin area above Sioux City, from which the main stem reservoirs receive their water supply, a local drought started to develop in North Dakota and eastern Montana late in 1957. Winter precipitation was moderately subnormal in the mountain headwaters, and generally deficient in the plains areas of Montana and the Dakotas. As a result, the March-April runoff from the northern plains was markedly subnormal for the sixth consecutive year. The flow volume from the mountains during the June rise also was disappointingly subnormal, due to hot, dry weather in May. Runoff from the Yellowstone Basin was particularly deficient. Total natural runoff from the Missouri Basin above Sioux City in calendar year 1958 is expected to amount to only about 16.4 million acre-feet. This is some 5 million acre-feet less than the natural runoff in 1957, and 8½ million acre-feet less than the normal annual runoff. Only 1 year since 1940 has had lower annual runoff; that was 1955, with 16 million acre-feet.

In sharp contrast with conditions in the upper basin, normal and above-normal precipitation has been experienced in the Lower Missouri Basin in late 1957 and

the spring and summer of 1958. June and July 1958 were particularly wet in the lower basin; with a few of the lower basin tributaries experiencing record floods, and others with flood peaks generally the highest in the last 5 to 10 years. Thus releases required from the main stem reservoirs for lower river purposes have averaged considerably less than in the recently past drought years of 1954, 1955, and 1956.

The 1959 water supply which may be available to the main stem reservoirs can be forecast only within very wide limits at this time, because of the great influence of weather conditions this winter and next spring. Therefore, a wide range of water supply estimates for 1959 have been prepared for use in developing the 1959 reservoir operating plans. These estimates of basic natural flow from the basin above Sioux City in calendar year 1959 range from a most-probable median (normal year) volume of 25 million acre-feet; to as low as 12.6 million acre-feet in case of a very unfavorable adverse year, and to as high as 29.5 million acre-feet for a so-called upper quartile year. There is only one chance in four that this latter value will be exceeded.

These water supply values just cited must be adjusted to meet the effects of new upstream reservoirs and irrigation projects which have come into operation since 1950, to arrive at the net inflow of water to the main stem reservoirs. The net effect of operation of new upstream reservoirs and new irrigation in calendar year 1958 will be to increase the water supply available for regulation by the main stem reservoirs this year by about three-fourths million acre-feet. This results largely from drawdown of carryover storage of Canyon Ferry, Tiber, Boysen, and Buffalo Bill Reservoirs in this low-flow year, while operating to serve their own local functions. In 1959 the net effect of operation of new (post-1950) upstream reservoirs and irrigation projects will decrease the water supply available for regulation by the main stem reservoirs, from as little as 0.4 million acre-feet in an adverse low-flow year to as much as 0.9 to 1.2 million acre-feet in case of a normal or wetter year. Irrigation water use and tributary reservoir evaporation account for approximately 0.2 million acre-feet of this 1959 depletion. The balance of upstream depletions is for refilling of the upstream reservoirs as rapidly as the natural water supply may permit.

Thus, the water supply from the Missouri Basin above Sioux City for regulation by the main stem system is expected to be as follows:

Calendar year 1958

[Million acre-feet]

Natural water supply	16.4
Effects of upstream projects	+.8
Net water supply for main stem regulation	17.2

Calendar year 1959

[Million acre-feet]

	Upper quartile	Median	Lower quartile	Adverse
Natural water supply	29.5	25.0	20.3	12.6
Effects of upstream projects	−1.2	−.9	−.7	−.4
Net water supply for main stem regulation	28.3	24.1	19.6	12.2

STORAGE FACILITIES AVAILABLE FOR USE IN 1958–59

The full storage capacities of the Fort Peck, Fort Randall, and Gavins Point Reservoirs are available for use during the 1958–59 operating period. At Garrison and Oahe, however, construction has not been completed, and there are interim limitations on the amount of water that can be stored.

At Garrison, pending completion of construction of relocations and remedial works at Williston, filling of carryover storage is limited to elevation 1834 (17.4 million acre-feet); and the limit for temporary flood control impoundment for any normal flood is set at elevation 1840 (19.4 million acre-feet). These interim limits will continue at least through 1959. A general agreement has just recently been reached with the city, and it appears construction can proceed so that

these interim limitations on storage in Garrison Reservoir can be removed in 1960 or 1961. To date, of course, this limitation has been academic.

At Oahe, which will continue in construction status for several years, pool elevations ordinarily will not be drawn below elevation 1450 (150,000 acre-feet); and are not to exceed elevation 1,473 (718,000 acre-feet) before mid-November in 1959, and elevation 1,484 (1,139,000 acre-feet) from mid-March to mid-November 1960, except as excessive inflows may cause temporarily higher pool elevations, even with all six outlet tunnel gates wide open. These restrictions on filling are necessary to preserve the safety of the partially constructed dam in case of large floods. It should be noted, however, that even with this small initial impoundment, Oahe is an important contributor to main system operations. Some of this initial impoundment space will be quite useful in intrasystem water manipulation for 1958–59 and 1959–60 winter power operations. Also, the high degree of flood regulation which results automatically from the limited discharge capacity of the outlet tunnels at the low heads available at Oahe during this period will permit Fort Randall to operate at 10-foot higher levels in the winters of 1958–59 and 1959–60 than in previous winters. In fact, with Oahe closed, Fort Randall Reservoir levels now are being raised to the ultimate normal operating range.

OPERATIONAL AND WATER REQUIREMENTS

Operational and water supply requirements for each of the functions to be served in the 1958–59 period are presented in detail in the August 1958 report on the annual operating plan. The primary function requirements are briefly summarized below:

Flood control requires that each reservoir not be filled certain specific levels except during any actual floods which may occur. The most significant requirements are that the reservoirs not be filled above the following levels, during the periods indicated, except as required in actual scheduling of flood control operations:

Conservation storage limits

[Million acre-feet]

	March 1959	Summer 1959	March 1960
Fort Peck	14.9	18.4	14.9
Garrison	15.6	17.4	15.6
Fort Randall	3.8	5.2	3.8
Gavins Point	[1] .375	.475	[1] .375

[1] Apr. 15 to July 31, inclusive.

Irrigation water usage in the upstream tributary areas and on the main stem must be fully provided for, and adequate allowance must be made for evaporation and storage operations at upstream tributary reservoirs. The magnitude of these uses in 1958 and 1959 has already been referred to in this paper, and they have been fully allowed for in arriving at the net water supply available for regulation by the main stem reservoirs.

Main stem reservoir evaporation losses will amount to about 500,000 acre-feet in 1958. In 1959, this evaporation is estimated to range from 600,000 to 750,000 acre-feet, depending on hydrologic conditions.

Municipal water supply and stream sanitation require that Missouri River discharges not be allowed to fall below certain specific rates at key localities. The most significant requirements are an interim midwinter minimum rate of 9,600 cubic feet per second at Kansas City; and open-water and midwinter minimum daily average rates of about 6,000 cubic feet per second and 4,000 cubic feet per second, respectively, below Garrison Dam to maintain adequate river stages for satisfactory operation at municipal water supply water intakes in North and South Dakota. These latter rates are lower than in previous years. Completion of the new water intake at Mobridge by the Corps of Engineers, and some lowering of the Washburn intake by the city this past summer, have enabled these reductions.

Further operational difficulties last winter at the Yankton, S. Dak., city water intake continue to make it desirable, as a temporary measure, to not reduce Gavins Paint daily average releases below the 7,000 to 8,000 cubic feet per second range whenever the river is not frozen over immediately below Yankton.

The basic difficulty at Yankton appears to be that the water intake is inadequate for satisfactory operation to serve present-day municipal water requirements at low river stages. The proper solution to this problem obviously is installation of an adequate water intake system. Meanwhile it will be desirable to adjust Gavins Point releases as much as may be practical to help alleviate the situation. However, should the situation worsen this could involve serious interference with patterning Gavins Point power to the system loads, and other local emergency measures might be necessary to keep the water plant in operation.

Navigation requires seasonal maintenance of specific minimum flow rates in the Missouri River below Sioux City to provide satisfactory navigable depths. With the channel construction still incomplete, it is very desirable to maintain minimum flows of 25,000 to 28,000 cubic feet per second at Omaha, 31,000 cubic feet per second at Nebraska City, and 35,000 cubic feet per second at Kansas City during the navigation season. An 8-month season, from late March to late November, is highly desirable; but shortening of the season is preferable to any reduction in these flow rates. Curtailment of the commercial navigation season to less than about 6 to 7 months, however, would be expected to severely reduce commercial navigation on the Missouri River during any years of such curtailment. In addition to the foregoing needs for commercial traffic on the Missouri River there is a need, in case of an early close of the main navigation season, for maintenance of a flow of 15,000 cubic feet per second at Sioux City through October, if practical, (1) to permit construction of Missouri River bank stabilization and navigation works to proceed for the fall construction season, and (2) to allow time for adjustments in Mississippi River navigation in case of low flow on that stream.

Power requires that heads and discharges at the four operating main stem plants be maintained in such manner as to obtain maximum marketable power generation consistent with the other primary functions of the reservoirs.

The present installed capacity of the four main stem plants has a total nameplate rating of 745,000 kilowatts. No new power units have been added in the past year, and no more are scheduled until early 1960. The powerplants are interconnected by high voltage transmission lines to form an integrated power system. For operating reasons, the powerhouse bus at Fort Peck is split, with the small (15,000 kilowatt) unit connected to the west where it operates in conjunction with the Bureau of Reclamation's Canyon Ferry powerplant; and the two large Fort Peck units (35,000 kilowatts each) operated interconnected with the downstream main stem power plants.

Even though 1958 has been a relatively poor water year, and no new power units have been added, the increased system operating efficiency possible with the addition of the relatively small pool at Oahe will permit a further increase in main stem system firm power generation. Extensive studies were made by the Corps of Engineers and Bureau of Reclamation in the spring and summer of 1958 as a basis for a plan of expanded firm power operation for the winter of 1958–59. Within the limits of a reasonably balanced multiple-purpose reservoir operation program the plan finally developed maximizes the power available with which to (1) meet the firm power requirements of existing power system customers within their individual allotments, and (2) extend service to the firm power allottees not previously served. It is apparent, from a detailed review by the Bureau of Reclamation, that this expanded power plan will make sufficient power available to meet all present commitments, including the increased commitments which accrue on January 1, 1959, to the extent that existing customers desire and can use the power, as well as commitments to new customers having existing firm power allotments (based on allocations made in 1954) and which will be ready to initiate the receipt of firm power service this winter. Although kilowatt peaking capacity will be adequate the expected energy or kilowatt-hour output during the 1958–59 winter will fall somewhat short of the requirements of these firm power customers. As necessary, this deficiency can be met by acquisition of off-peak energy from other power systems and voluntary reductions in power deliveries.

Reference is made to Mr. John R. Walker's discussion of new firm power service, in this connection, in his presentation to the Missouri Basin Interagency Committee at St. Paul, Minn., on August 27, 1958.

Ample amounts of firm power, together with substantial amounts of nonfirm energy will be available from the main stem plants during the remainder of the open-water season in 1958 and in the open-water season of 1959. During the 1958–59 winter season, however, the expanded firm power generation rates worked out by the Corps and Bureau will be of primary importance in schedul-

ing operations of the reservoirs. Using December 1958 as an index, the peak firm power generation rate is estimated at 510,000 kilowatts at the plants. Additional machine capability of approximately 50,000 kilowatts is also needed as a reserve. The associated energy generation requirement is estimated at approximately 214 million kilowatt-hours for December 1958, a portion of which might be obtained from other sources if necessary. Related, but somewhat lower, firm power requirements for the other 1958–59 winter months are also established as a basis for scheduling winter operations of the main stem reservoirs.

There are also other specific operating objectives that are highly desirable for recreation, fish and wildlife purposes, and other secondary activities. It is important that they are recognized as much as practical in actual operations.

Also, during this initial filling period, it is important that the reserve of carryover storage be built up in the main stem reservoirs as rapidly as practical. This is not a primary functional objective of reservoir operation, but it is important for sustained and expanded future service to all primary and secondary functions.

1958–59 ANNUAL OPERATING PLAN WATER SCHEDULES

The month-by-month schedules of storage and releases for the main stem reservoirs are shown on the accompanying plate 1 (2 sheets).[1] The objective of these schedules is optimum use of the water supply, as it can be regulated by the storage facilities available, to serve the various requirements on an equitable basis. These schedules outline just where the water will be kept in storage at any given time, and just how much water will be released from each reservoir at various times throughout the year.

Actual operations are indicated on plate 1 up to August 1, 1958. In brief, the actual operations since August 1957 have been as follows:

Gavins Point releases were continued at navigation season levels until late in October, and then reduced gradually, to close the 1957 navigation season on October 28 at Omaha, November 1 at Kansas City, and November 5 at the mouth of the Missouri River. Thus, only a 6-month navigation season was provided in 1957. The Sioux City discharge was then stabilized at 15,000 c.f.s for 2½ weeks, until November 15, to permit continued work on the Missouri River bank stabilization work; after which Gavins Point releases were reduced to the planned winter operating rates. The Fort Randall Reservoir was drawn down to elevation 1,323, and Gavins Point to elevation 1,205, by November, in preparation for the winter's power operations. Garrison Reservoir releases were adjusted during the August to October period as required to balance the system for power operations, while Fort Peck releases were maintained at normal power levels through this period.

Winter releases from the main stem reservoirs were patterned to meet the interim minimum low flow requirements on the lower river for stream sanitation and water supply, and to meet system winter firm power generation rates as previously scheduled. Gavins Point releases were temporarily increased on six occasions (not shown on plate 1) when weather forecasts indicated possibilities of sharp flow reductions by lower river freezeups. On three of these occasions the freezeups actually did occur, and the temporary increases in Gavins Point releases successfully prevented or minimized the drops in discharges below desirable levels at downstream points. Kansas City actually dropped below the interim minimum of 9,600 c.f.s. only once; by a small amount on January 6–7, 1958. Releases from the three upstream reservoirs were governed by the winter power generation requirements, with the surplus water in excess of lower river requirements recaptured by refilling of the Gavins Point and Fort Randall pools to maximum levels permissible at the beginning of the 1957 flood season. During a large part of January, February, and March 1958, releases from Garrison were maintained at the maximum safe winter channel capacity limit of 15,000 c.f.s. Some 1.5 million acre-feet more water than needed for lower river requirements was used through the Garrison powerplant in the winter season, and recaptured in Fort Randall and Gavins Point and saved for later use. Fort Peck winter power operations were patterned to power requirements, with special coordination of operations between Fort Peck and Canyon Ferry to obtain maximum combined power efficiency of Canyon Ferry and the main stem system.

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[1] The plates referred to in this document are on file with the committee.

In late March 1950, Gavins Point releases were gradually increased to open-water season levels, to open the 1958 navigation season in early April, as had been scheduled in last year's annual operating plan. Subsequently in 1958, Gavins Point releases have been varied as necessary to meet minimum navigation season flow requirements downstream. Due to the plentiful tributary inflow to the lower Missouri River at Kansas City and downstream, Gavins Point release requirements this year have usually been determined by minimum flow needs at Nebraska City or Omaha, instead of mainly by Kansas City, as in recent years. Fort Randall releases since March have generally followed the pattern at Gavins Point.

Special operations associated with the August 3, 1958, closure of Oahe Dam have strongly influenced the patterning of Garrison releases and Fort Randall storage levels this past spring and summer. Garrison releases were held at near full powerplant capacity in April and May and then raised to 30,000 c.f.s. in most of June, to build up a special reserve of storage in Fort Randall prior to the Oahe closure. This reserve was planned for maintenance of system power and lower river-water service through the entire closure period. In early July, Garrison releases were reduced to 13,000 c.f.s. for 3 weeks, and then reduced to 6,000 c.f.s. for the last week in July and the first 10 days in August. Special precautions were taken to warn all river interests of this low midsummer flow condition between Garrison and Fort Randall, and the Corps of Engineers cooperated with the localities using water from the river to insure continuity of water supply. This special closure operation affected only the river reach from Garrison to Fort Randall, and seasonally normal operations were continued elsewhere on the river.

Due to the requirements of the special operation for Oahe closure, special pool level fluctuations at Fort Randall for carp control were not practical this year.

Fort Peck continued through the April to August period with releases adjusted to meet powerload conditions.

Even with the low runoff into the reservoir system in the March and June rise periods, the total system storage peaked in July 1958 at slightly over 24 million acre-feet, or about 2 million acre-feet higher than the previous year. Most of this gain, because of relatively less subnormal inflows, was in the Fort Peck Reservoir.

Turning now to the proposed future operations, varying sets of storage and release schedules are shown on plate 1 for the period after August 1, 1958, to bracket the range of probable water-supply conditions. For the period August 1958 to mid-March 1959, the water supply most likely will be between 80 percent and 120 percent of the August 1 basic forecast. The effects of any such variation will be reflected primarily in storage contents in Garrison and Fort Peck Reservoirs—note the mid-March 1959 range of storage variations at these reservoirs shown on plate 1. The four sets of schedules shown for the last 9½ months of 1959 correspond to the four different water-supply conditions previously discussed.

The August 1958 annual operating plan for 1958–59 proposes the following future operations:

The Gavins Point and Fort Randall summer release pattern will be continued until late October, to maintain satisfactory flows for navigation until November 1 at Omaha, November 5 at Kansas City, and November 9 at the mouth of the Missouri River. This will result in a 7-month commercial navigation season in 1958. A later closing date this year would have been very desirable in view of prospective heavy late season traffic, but is impracticable because of the poor water supply this year and future needs for impounded storage water for all purposes. At the end of the commercial navigation season, releases from Gavins Point and Fort Randall will be reduced gradually to winter levels.

Garrison releases, which had been down to 6,000 c.f.s. for the Oahe closure in early August 1958, were increased to 30,000 c.f.s. in the latter part of that month, and held at that level through September. This raised the new Oahe Pool to elevation 1,464.6 (467,000 acre-feet) by October 7, to provide sufficient head on the Oahe outlet tunnels for passage of normal operating discharges. The earlier rapid decline of Fort Randall storage was thus checked by late September. Garrison releases will be held in the 15,000–20,000 c.f.s. range during October 1958, and then leveled off at the 15,000 c.f.s. winter power operation rate. With this reduction in river discharge, the Oahe Pool will lower gradually, to about elevation 1,455 by mid-November. The Fort Randall Pool will level off at approximately elevation 1,335–1,337 by the beginning of the winter. Recapture storage space will thus be provided in Fort Randall and Oahe, for refilling during

winter power operations. Fort Peck releases, which have been in the normal power operation range since August 1, will be continued in this range throughout the period.

The winter operation program will provide for the interim minimum winter flow requirements for stream sanitation and water supply, and supply the recently expanded 1958–59 winter firm power loads. The average release rate for the winter from Gavins Point will be approximately 8,800 c.f.s. which, when supplemented by downstream tributary inflows, will provide adequate minimum flows all along the lower river except for possible temporary interruptions downstream during severe freezeups. To the extent practicable, temporary increases in Gavins Point releases will be made to compensate for any such temporary downstream flow interruptions. Also, the moderate day-to-day and week-to-week variations in Gavins Point releases will be patterned, if practical, to avoid daily average discharges lower than the range of 7,000 to 8,000 c.f.s. at Yankton whenever necessary to keep the waterplant in operation. Winter releases at Fort Randall will generally parallel those at Gavins Point, except for much stronger peaking of power releases, which will be reregulated and smoothed out by Gavins Point. Releases at Garrison are planned to average approximately 14,000 c.f.s. for the winter, with weekday releases mostly at the 15,000 c.f.s. maximum safe daily-average winter channel capacity limit. The excess of Garrison winter releases over lower river requirements will be recaptured mainly in Fort Randall in the early winter season, with recapture in Oahe mostly later in the winter period. This sequence in refilling recapture storage space is planned to enhance midwinter power operations. Winter releases at Fort Peck are scheduled to continue in the 6,000 to 7,500 c.f.s. normal power operation range. Winter releases at Garrison, and to some degree at Fort Peck, will vary considerably from hour to hour and occasionally from day to day and week to week, as required to meet variations in firm power loads. By mid-March of 1959, Oahe, Fort Randall, and Gavins Point Reservoirs will be filled to the permissible seasonal operating levels.

In the latter part of March 1959, the plan provides for increasing Gavins Point and Fort Randall releases gradually to provide navigation season flow levels at Sioux City on April 1, 1959, or as soon thereafter as ice conditions below Gavins Point and prospective river traffic schedules indicate opening of the season to be advisable. This delay in opening of the 1959 navigation season until at least April 1 at Sioux City (April 10 at the mouth of the Missouri River) is necessitated by the deficiency of the water supply in 1958. Outflow from Fort Randall and Gavins Point thereafter will be maintained as required for navigation and flood control until close of the navigation season in the fall. With a 20 million acre-foot water supply or better in 1959, the navigation season releases are scheduled to be continued until mid-November. In the event of a seriously deficient water supply in 1959, it is planned to close the navigation season earlier—by October (6-month season) in the event of the adverse water supply condition. Garrison releases during the 1959 open-water season will be varied as required for summer power operations and backing up Fort Randall, with the intervening Oahe Pool level varying as may be required for passage of system operating discharges through the outlet tunnels. Fort Peck releases throughout 1959 will be held to levels desirable for system power generation.

Winter operation after the close of the 1959 navigation season, as in 1958–59, will be geared to system firm power, water supply, and stream sanitation requirements; with somewhat better service than this year unless limited by seriously subnormal water supply conditions in 1959.

ACCOMPLISHMENTS WITH 1958 AND 1959 OPERATIONS

Operation of the Missouri River main stem reservoirs in accordance with the detailed schedules just summarized is aimed at multiple-purpose services to the people all along the Missouri River.

Currently, while the reservoir system is still in the initial storage filling phase particular attention must be paid both to current year-to-year multiple-purpose water service requirements, and to the expanded future service which will be possible after more water is accumulated in the reservoirs.

In 1957, very good progress was made on filling of the main stem reservoirs. On December 31, 1957, total storage contents of the main system amounted to 20 million acre-feet, of which 9 million acre-feet was usable active storage above the 11 million acre-foot total volume in the minimum pools established for power, irrigation diversions, recreation, and other purposes. Our progress in filling the

reservoirs suffered somewhat of a setback because of the poor water supply in 1958, but even with this disappointing development it is anticipated that total system storage will be increased some 1½ million acre-feet in calendar year 1958. Half of this gain has resulted from drawdown of upstream tributary reservoirs and will be recouped from main stem inflows in the future. Substantial progress on filling of the main stem reservoirs, even after allowance for refilling of the upstream storage, is provided for in the operating plans for 1959 if inflows are anywhere near normal. The 1959 water schedules provide for a further gain in main stem system storage as follows:

Storage gain in million acre-feet

Upper quartile water supply	10.7
Median water supply	6.8
Lower quartile water supply	2.0
Adverse water supply	—3.8

Garrison Reservoir, which is of particular interest here in North Dakota, was filled above elevation 1,800 in July 1957. The poor runoff from the Yellowstone River in 1958 prevented any further fill this year. In 1959, the operating plans call for further substantial filling of Garrison to the degree the water supply will permit. With a median water supply, Garrison will fill to about elevation 1,825 in July 1959, and be above elevation 1,820 on December 31. With an upper quartile water supply, Garrison will be filled above elevation 1,830 in 1959, and with a water supply any greater than upper quartile water may have to be spilled from Garrison, and from the system, to avoid filling the reservoir above the temporary limiting elevations at Williston.

Operations in 1958 have continued the very high degree of multiple-purpose use and reuse of water by the main-stem system. Total water releases from the main-stem reservoirs to be used for power generation in calendar year 1958 will be approximately as follows:

	Percent
Fort Peck	100.0
Garrison	89.3
Fort Randall	100.0
Gavins Point	99.0
Total system	96.6

The special operations of Garrison necessary immediately before and after the Oahe closure involved considerable releases in excess of the initial powerplant capacity, as anticipated in last year's operating plan. Without this special requirement, an even better water-usage record is anticipated in 1959.

Functionally, all the important requirements and objectives were met quite well in 1958, considering the deficiency in water supply, and they will all be met in 1959.

Flood control storage capacity adequate for great reductions in any main-stem floods which could originate from the upper Missouri Basin was provided in 1958 and will be provided in 1959. Although there were no major floods from the upper basin area to be controlled by the main-stem reservoirs in 1958, the system was operated to reduce flood flows on the Missouri River from St. Joseph, Mo., to the mouth in July 1958 by as much as 25,000 cubic feet per second.

Irrigation water usage on the tributaries is fully allowed for, and all present main stem irrigation water requirements have been and will be supplied.

Water supply and stream sanitation requirements all along the Missouri River were met as planned in 1958, and all minimum flow requirements for these purposes will be met in 1959, except in the few instances where severe freezeups downstream may possibly cause temporary local interruptions. Even in these instances, special operations of the reservoirs are planned to minimize local difficulties, as has been done quite successfully in the past.

Navigation water service, which was limited to a 6-month season in 1957, has been extended to provide a 7-month season in 1958. Well-regulated flow conditions were maintained during the shortened seasons. Even though water supply and storage conditions have prevented navigation for the normal full 8-month seasons, the extension to more nearly normal length of season is encouraging. Commercial traffic volume, which fell off to only 270,000 tons in 1957 is heading for a recordbreaking 500,000 tons in 1958. The 1959 navigation season will be opened on April 1, Sioux City date (April 10 at mouth of river) and can be

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extended to 7½ months in 1959 with lower quartile or better water supply. Even with adverse water supply conditions, commercial navigation can be assured of a 6-month navigation season in 1959.

Power generation again is being expanded substantially. Total system energy generation, which was 2¼ billion kilowatt-hours in calendar year 1956 and 3 billion kilowatt-hours in 1957, is headed for 3½ billion kilowatt-hours in calendar year 1958. Firm power generating capability in the winter of 1957–58 was 25 percent greater than in the preceding winter, and again is being increased an additional 15 percent for this coming winter. Total system energy generation is scheduled at 3¾ to 4¼ billion kilowatt-hours in 1959, depending on water-supply conditions.

In addition to the foregoing primary-function accomplishments, very significant secondary benefits are being realized in the recreation, fishing, and wildlife fields. The main-stem reservoirs had over 2 million visitors in 1957. This was a 33-percent increase over 1956, and present indications are that the number of visitors in 1958 will show another substantial increase. Over 1,800 boats were based on the reservoirs during the 1957 recreational season, and fishermen caught over 330,000 pounds of fish. Winter fishing through the ice has been very successful and is becoming increasingly popular. During the hunting season, thousands of hunters obtained their share of the more than 1,880,000 migratory waterfowl using the reservoirs. In addition to the reservoirs, rapidly expanding pleasure boat use is being made of the river between and downstream from the reservoirs, where relatively stable flows of silt-free water have replaced the unattractive muddy natural river. Although no statistics are available on this use, it is known to be especially heavy at many points along the river.

CONCLUSION

The primary intent of my report today has been to inform the Inter-Agency Committee and the people of the Missouri Basin on actual accomplishments of operation of the main-stem reservoirs this past year and of the specific plans for their operation in the year ahead.

This report also serves to emphasize the coordinating effort that is a guiding principle of both the Corps of Engineers and the Reservoir Coordinating Committee in the operation of the main-stem reservoir system. Our constant aim is to make these resources perform the widest possible public service on the most fair and equitable basis to all interests.

We commend it to the careful review of the Inter-Agency Committee, whose overall coordinating function has successfully guided the authorized Missouri Basin water resources control program through over 12 years of project construction and operations.

I feel that the 1958 results have shown continued substantial advancement in services performed, even in a disappointingly poor water supply year. The future looks increasingly bright for year-by-year gains and the ultimate fulfillment of the economic and cultural gains envisioned in the original concept of the basin program.

REVIEW AND ANALYSIS OF VIEWS EXPRESSED AT APRIL 29, 1958, PUBLIC MEETING, COORDINATING COMMITTEE ON MISSOURI RIVER MAIN STEM RESERVOIR OPERATIONS

INTRODUCTION

On April 29, 1958, the coordinating committee held a special public meeting to obtain the views of affected interests on the best methods of operating the Missouri River main-stem reservoirs in the 1958–59 period. The meeting was open to all interests affected by the multiple-purpose operation of these reservoirs. It was held in connection with the committee's regular spring meeting and initiated a new plan to broaden opportunities for obtaining public views on the control and regulation of water stored on the main stem. The public meeting was attended by about 110 individuals, with 32 representatives of organizations in Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, and Missouri presenting their views for consideration of the committee. Presentations were made on a State-by-State basis, with equal time allotments for each State. A complete record of the meeting was reproduced, and has been carefully studied by the committee. This special report has been prepared as a result of that review.

Some of the points raised at the public meeting are directly involved with certain fundamental aspects of main-stem project planning and authorization, and with the role of the coordinating committee. The following summary of basic information on these points is pertinent to the committee's consideration of points and issues raised.

PROJECT AUTHORIZATION

The authorized Missouri River main-stem reservoir system will consists of six projects on the Missouri River in eastern Montana, North and South Dakota, and northern Nebraska. At present four of these projects—Fort Peck, Garrison, Fort Randall, and Gavins Point—are teamed up in initial system operation.

The Fort Peck Reservoir was originally authorized by Congress in the Rivers and Harbor Act of 1935, for the purpose of improving navigation on the Missouri River, and for other purposes incidental thereto. Subsequently, the Garrison, Oahe, Big Bend, Fort Randall, and Gavins Point projects were authorized by Congress in the Flood Control Act of 1944 as a part of the general comprehensive plans for the Missouri River Basin set forth in House Document 475 and Senate Document 191, 78th Congress, second session, as revised and coordinated by Senate Document 247, 78th Congress, second session. These plans also provided for modification of operation of the Fort Peck Reservoir, making it a unit in the six-reservoir system.

The plans of the Corps of Engineers and Bureau of Reclamation which were incorporated in House Document 475, Senate Document 191 and Senate Document 247 were based on integrated multiple-purpose operation of the six-reservoir main stem system along five principal functional lines as follows:

(a) Flood control along the main stem of the Missouri River, by operation in coordination with a system of levees and flood walls along the river and with tributary reservoirs.

(b) Irrigation along the Missouri River and by diversions from the Missouri River in Montana, North Dakota and South Dakota, with water supplied to associated irrigation and diversion works.

(c) Sustained minimum flows for stream sanitation and water supply in the Missouri River, without harmful diminution by uses for other purposes below levels that will be adequate after installation of sewage treatment and pollution control measures.

(d) Navigation on the lower 762 miles of the Missouri River, with releases during the navigation season to provide navigable depths in the authorized system of open-river channel regulation and bank stabilization works.

(e) Hydroelectric power generation to the fullest extent consistent with the other beneficial uses of water.

These plans also considered uses of the reservoirs for other purposes such as recreation and fish and wildlife as important, but necessarily of a secondary nature. The concept of multiple-purpose development and full utilization of the water resources of the Missouri River for public benefit throughout the Missouri Basin is fundamental to the comprehensive plans authorized.

ROLE OF COORDINATING COMMITTEE IN MAIN STEM OPERATIONS

The Corps of Engineers is the Federal agency assigned to construct and operate the six main stem reservoir projects; and the Bureau of Reclamation is the Federal agency assigned responsibility for transmission and marketing of power and disposition of irrigation water from these projects. Other Federal agencies and the Missouri River States also have authorities and responsibilities directly involved with main stem operations. For coordination between the Corps and Bureau and with the other agencies and interests affected, main stem reservoir operations are being conducted in accordance with annual operating plans which are prepared and agreed upon in advance of actual operations.

Although the fundamental guides for operation of the main stem reservoirs were established by the congressional authorization, very substantial flexibility of operation is inherent in the main stem system for year-to-year adjustments of operations for optimum coordination of each year's water supply conditions with the service requirements of the various authorized functions. This flexibility is important to fulfillment of the objectves of the program. It is realized through the annual operating plans.

The coordinating committee was established upon invitation of Missouri River Division, Corps of Engineers, to coordinate and consolidate the viewpoints of all the interests concerned with main stem reservoir operations, so

that they may be represented adequately in the annual operating plans, and carried into actual operations. All operations, of course, must be conducted in accordance with the broad guides of the congressional authorization. The coordinating committee's role is to insure that year-to-year operations provide equitably distributed services to all the functions and interests for which these projects were authorized and constructed. This is a particularly important role during the current period of initial operations when services are being expanded toward but cannot yet reach the full levels that will be possible after all six projects are completed and the system storage is filled.

The coordinating committee consists of official representatives of the following States and Federal agencies:

States: Montana, North Dakota, South Dakota, Wyoming, Nebraska, Iowa, Colorado, Kansas, Missouri.

Federal agencies: Corps of Engineers, Bureau of Reclamation, U.S. Public Health Service, Federal Power Commission, Fish and Wildlife, U.S. Weather Bureau, U.S. Geological Survey.

It should be noted that the coordinating committee is concerned with operation of complete components of the main-stem system. Project modifications or additions, or changes in authorized service functions of projects, are responsibilities of other agencies and the Congress; not of the coordinating committee.

GENERAL CATEGORIES OF VIEWS EXPRESSED AT PUBLIC MEETING

Views expressed to the coordinating committee at the April 29 public meeting fall into the following general categories:

Endorsement of current operating policies, including opposition to change.

Requests that power be given priority over navigation, including requests that navigation releases be suspended (as some contended is required by section 1 of 1944 Flood Control Act), and suggestions that slack-water navigation be provided.

Requests that navigation be given priority, and that power be subordinated.

General suggestions of prudence in use of water.

Requests that reservoirs be filled and stabilized for recreation and other local usage.

Specific views with respect to details of operations affecting specific localities.

Suggestions on other matters.

These views are analyzed in the remainder of this report.

ENDORSEMENTS OF CURRENT OPERATING POLICIES

The record shows that witnesses from a large part of the affected area endorsed the current operating policies for the main-stem reservoirs.

In this connection, the committee points out that the seriously subnormal water supply into the main-stem reservoirs the last 5 years and the incomplete status of the main-stem projects have prevented service for any function at the optimum levels that will be possible as soon as the system is completed and filled. However, good service steadily expanding as the water supply and construction progress permit, is being provided all functions all along the river. Particular attention has been given to equity of service to each of the functions, with the paramount objective being maximum collective benefits considering all interests and all areas in the Missouri Basin.

Several witnesses specifically stated their opposition to any change from the current operating policies. The same opposition is implied on the part of all who appeared to endorse the manner in which main-stem operations have been handled up to this time.

REQUESTS FOR POWER PRIORITY OVER NAVIGATION

Electric Power Cooperative spokesmen strongly urged that power be given a dominant priority over navigation and that navigation releases be drastically curtailed or entirely suspended at least until the main-stem reservoir storage is completely filled to normal operating levels. They want the system operated for maximum production of year-around firm power. Statements were also made that the O'Mahoney-Millikin amendment to the Flood Control Act of 1944 established a priority for power over navigation; and that navigation on the Missouri River should be provided by a slack-water project of locks and dams in place of the open-channel stabilization project now under construction.

One witness also questioned the accuracy of the 1951 report on adequacy of flows in the Missouri River and stated his belief that immediate restudy was needed.

The slack-water navigation suggestion is beyond the responsibility and immediate concern of the coordinating committee. The existing navigation project with which current main stem reservoir operations are concerned is the open-channel project which has been authorized by Congress and is an actual part of the Missouri Basin program.

The adequacy of flows report is a thorough analysis by a group of well-qualified experts from the Federal agencies and States concerned with the Missouri River Basin covering (1) the water supply available, (2) water requirements for the various uses of the basin program, (3) the manner in which the water supply can be regulated to fulfill the requirements and, (4) conclusions. The 1951 adequacy of flows report concluded that the regulated water supply of the Missouri River is adequate to provide for the multiple-purpose uses, taking into consideration that in the event of infrequent, severe, drought conditions there would be tolerable irrigation shortages on some tributaries and tolerably shortened navigation seasons. The States and participating Federal agencies concluded that such shortages should be tolerated in establishing the development program so that maximum utilization of the basin's water and land resources would be achieved. The only substantial change in basic information and assumptions since the report in 1951 has been a considerable reduction in Bureau of Reclamation estimates of future depletions of water supply for irrigation in the Missouri Basin above Sioux City. Obviously this change will not alter the conclusion that the water supply of the Missouri River is adequate. Although there would be some minor changes in the original basic data assumptions, the committee concludes there is no need for detailed restudy at this time.

The O'Mahoney-Millikin amendment as stated in the Flood Control Act of 1944 and the River and Harbor Act of 1945 does not specifically cover the relative priority of hydroelectric power and navigation. This question (and others) was taken up at a special joint hearing before the Committee on Interior and Insular Affairs and the Committee on Public Works of the U.S. Senate in 1957. Several witnesses at that hearing contended that power was given a priority over navigation on the Missouri River. However, the Chief of Engineers who is the Federal official with primary administrative authority over the Missouri River main stem projects indicated by letter to the chairman of the joint Senate committee hearing that he did not consider that the O'Mahoney-Millikin amendment established any priority for power over navigation on the Missouri River, and that the purposes for which the projects are to be operated are defined by the legislative authorizations of the specific projects. He also stated that the primary purposes of the Missouri River reservoirs as authorized are flood control, irrigation, navigation, and hydroelectric power, and quoted the following statement from Senate Document No. 247 as establishing the relation of power to other beneficial uses of water:

"Both agencies recognize the importance of the fullest development of the potential hydroelectric power in the basin consistent with other beneficial uses of water."

This is the understanding the coordinating committee has with regard to operation of the main stem reservoirs.

There is no question that navigation and power have been in somewhat of a competitive position with respect to operation of the main stem reservoirs the last 4 years. Somewhat more power could be generated currently if navigation service were to be eliminated, just as somewhat better navigation service could be provided if power were not a factor. It is the view of the coordinating committee that both navigation and power are important primary functions of the main stem reservoirs, and that both functions along with the others are to be served equitably. In this connection it is pointed out that a special subcommittee study reported to Missouri Basin Inter-Agency Committee in September 1957 indicated a high degree of compatability between navigation and power operations of the main stem reservoir system when it is completed. The study indicated that operations completely ignoring navigation would produce power benefits only 2 to 10 percent greater than with multiple-purpose operations serving both functions—there would be no economic justification for eliminating navigation service in the interest of power production.

Although currently during the initial filling period the margin of difference might be somewhat higher for a year or two, the situation does not remotely approach a condition of no power or no navigation. Actually, in 1957 98.5 per-

cent of all water released at the main stem dams was used through the power turbines. Power generation in 1957 amounted to 3 billion kilowatt hours, 60 percent of which was marketed as firm, as compared to generation of only 0.8 billion kilowatt hours in 1954, of which 55 percent was marketed as firm. Thus power generation is being advanced quite rapidly by means of the equitably adjusted operating programs agreed upon by the coordinating committee.

The committee is pleased to have called to its attention any special needs for power which may have a special bearing on provisions for power in any annual operation plan. Full consideration will be given power, on the basis of circumstances at the time. However, the committee does not consider that any blanket proposal for maximum service to any function by elimination or inequitable reduction in service to any other primary function is compatible with the authorizing legislation.

REQUESTS THAT NAVIGATION BE GIVEN PRIORITY, AND THAT POWER BE SUBORDINATED

The majority of witnesses who expressed an interest in navigation endorsed the current operating policy of equitably distributed water service to all functions and areas. However, a few of these witnesses suggested that power should be incidental to the other primary functions; one witness indicated that as between the interests of power, irrigation and navigation he considered it only logical to consider navigation first; and another witness opposed wintertime release of water for power before there is adequate water stored to maintain a navigable channel during the barge season.

As indicated earlier in this report, the coordinating committee adheres to the legislative concept of multiple-purpose service by the main stem reservoirs. Operation of the main stem reservoirs primarily for navigation benefits would be in direct violation of this concept.

During the initial operating period, the coordinating committee has been faced with the problem of impounding sufficient water in the newly constructed reservoirs to bring the storage up to satisfactory operating levels as soon as possible, while still maintaining essential services on the river. This initial filling had to be accomplished during a period of adverse runoff conditions in the upper Missouri Basin. Any operational plan based on special priority and full service for navigation under such conditions would have infringed inequitably on the other functions, and prevented a buildup in storage capacity that is important to security of navigation during future droughts just as it is for any other function.

The current situation with respect to navigation is rather similar to that considered in the adequacy of flows report for severe, drought conditions after the entire program is completed. In that report it was concluded that under infrequent, severe drought conditions some shortages in navigation service should be tolerated in the interest of developing maximum utilization of our water and land resources. The shortening of the navigation season which has been necessary in the last few years is in keeping with the same basic philosophy. Also, it should be recognized that the recent situation which resulted from natural water shortages just at the time for initial filling of the new reservoirs is a temporary and unique experience, which will not be repeated. Better service to navigation, power, and many of the other functions will be assured as soon as the main stem system is completed, and the storage initially filled.

GENERAL SUGGESTIONS OF PRUDENCE IN USE OF WATER

Some of the witnesses emphasized the needs for prudence in the use of water, and efficiency in operation of the reservoirs. One specifically proposed that all available water above minimum requirements for all planned beneficiaries be stored and utilized when it can produce the greatest possible benefit. Another pointed out the importance of building up the basin power account substantially to enhance future irrigation project considerations, and urged that reservoir operations be carried on so as to afford cities adequate quantities of water needed in the future.

Operations of the main stem reservoirs have been and will be conducted with careful attention to these objectives. The circumstances dictate great prudence in the use of water. The importance of the basin account to fulfillment of irrigation objectives of the basin program is fully recognized. It is agreed that adequate water for future municipal use is vital.

REQUESTS THAT RESERVOIRS BE FILLED AND STABILIZED FOR RECREATION AND OTHER LOCAL USAGE

Witnesses explained how the drawdown of Fort Peck Reservoir had adversely affected recreation and how dropping of the shoreline created a bogging hazard to livestock. They requested that Fort Peck be refilled, and then would like to see the reservoir kept full, or not drawn down more than, say, 30 feet in the future. There was also a request of similar nature for close stabilization of the level of Lewis and Clark Lake (above Gavins Point Dam).

The Fort Peck Reservoir was drawn down substantially, from 12.7 million acre-feet on January 1, 1954, to 5.3 million acre-feet on January 1, 1956 (a drawdown of 50 feet), to provide essential service on the Missouri River downstream and to assist in filling the minimum power pools in Fort Randall and Garrison so that power could come on the line as scheduled. The poor runoff during 1954 and 1955 when the new power pools needed to be filled created the need for this drawdown at Fort Peck. Subsequently, despite continued subnormal water, steady progress has been made on refilling Fort Peck. Storage contents were back up to 9.3 million acre-feet on August 1, 1958 (a raise of some 30 feet).

While recreation is one of the multiple-purpose benefits to be derived from main stem storage, the Coordinating Committee must point out that it would be impractical to consistently maintain the reservoirs at levels that will completely satisfy many recreationists.

The reservoirs on the main stem of the Missouri River were justified and authorized primarily for flood control, irrigation, navigation, and power. In order that these reservoirs may function effectively for these purposes the water levels must fluctuate. In times of flood, water must be stored for flood control, and water levels will rise. In dry periods water must be drawn from storage to sustain irrigation, navigation and power. In normal years water levels in the Fort Peck, Garrison, and Fort Randall Reservoirs may need to fluctuate as much as 10 to 15 feet in a few months. In critical dry conditions much more substantial drawdown may be necessary at these major reservoirs. Such extreme drawdown will be necessary only very infrequently, but the justification of the cost of providing the large volume of storage is dependent upon such use to sustain irrigation, navigation, and power during critical low-flow periods.

It should be noted that after the initial filling of all the major reservoirs is completed, less fluctuation of the reservoirs will normally be required, except during rare major floods and very infrequent extreme droughts.

At Gavins Point the situation is somewhat different, particularly in degree, because of the smaller size of the reservoir and its basic reregulating character. The total fluctuation range will seldom exceed 5 feet, but it is important that Lewis and Clark Lake fluctuate this much in order that it fulfill its basic flood control and power functions.

The coordinating committee is well aware of the desirability of stabilizing pool levels as much as possible for recreation. Its objective is to minimize the fluctuations of reservoir levels as much as possible consistent with the primary water service requirements.

With regard to the bogging hazard to livestock from reducing of reservoir levels, the committee understands that lands surrounding the reservoirs are leased by the Corps of Engineers for agricultural and grazing purposes, as an incident to maintenance of the reservoirs. It is not considered that operation of the reservoirs for their authorized water regulation purposes should be inhibited because of unfortunate occurrences associated with such a purely incidental operation. If a major problem is involved, perhaps the leasing agency should give further consideration to the reservoir land leasing policy.

SPECIFIC VIEWS WITH RESPECT TO DETAILS OF OPERATIONS AFFECTING SPECIFIC LOCALITIES

Several specific suggestions were made concerning details of operation affecting specific localities.

One witness requested maintenance of Lewis and Clark Lake at elevation 1,207 feet, plus or minus one foot from May 1 to October 30 every year to provide for maximum recreational use.

The committee understands that the basic purposes for which Gavins Point was authorized were (1) to reregulate the fluctuating power releases from Fort Ran-

dall and (2) to control floods originating below Fort Randall. The basic planning for Gavins Point contemplated pool level fluctuations of 1 to 2 feet below elevation 1,208 during the nonflood season, and plus or minus 1 to 2 feet from elevation 1,204.5 during the main flood season, for the purpose of reregulating Fort Randall power releases. The zones between 1,204.5 and 1,210 during April 15 to July 31, and between 1,208 and 1,210 during August 1 to April 15, were established during the basic planning for Gavins Point to regulate any flood inflows that could reasonably be expected during these periods. Since flood control and power reregulation are essential functions of the Gavins Point project, the committee considers that operations should be conducted in this general manner.

A witness from Eastern Montana indicated difficulty in understanding the split of the Federal power system at Fort Peck, and that it would be important to his area if the division can be eliminated.

In this regard, the committee understands that as plans for the Missouri Basin project high-voltage transmission grid took shape, it was evident that completion of these lines would tie together two of the largest integrated power pools in the United States. These are the interconnected systems, a pool of over 50 million kilowatts which extends from Iowa and Nebraska all the way to the east coast, and the Northwest power pool with more than 10 million kilowatts extending from Idaho and Montana to the west coast.

The interconnected systems' pool (predominantly steam) maintains frequency within close limits on its entire system through the use of tie line load and frequency control, whereas the Northwest power-pool (predominantly hydro) maintains a frequency with a relatively wider range due to quite limited use of tie line load and frequency control equipment. Consequently if these two systems were to be interconnected there would be sizable transfers of power at times, depending upon the tendency for frequency deviation between the two systems, which would tend to overload any intervening transmission lines of relatively small capacity, such as the 115-kilovolt Fort Peck-Williston-Garrison transmission line. After a careful study of the situation it was decided that the two systems could be isolated most economically at Fort Peck, and consequently the bus was split at this location. Tests made in January 1957, showed the power swings to be intolerable and confirmed the necessity for isolating these systems until such time as the Northwest power pool improved control of its system frequency commensurate with that maintained in the interconnected systems.

On June 30, 1958, representatives of the Bonneville Power Administration, Corps of Engineers, and Bureau of Reclamation met at Portland, Oreg., and agreed on plans to provide tie line load and frequency control on the Federal Columbia River power system. It is estimated that this tie line load and frequency control system will be completed and in operation by July 1961. If other non-Federal members of the Northwest power pool take similar action where necessary, such that the system frequency is maintained within closer limits, it may be possible to close the tie at Fort Peck and operate as an integrated system. In any event, as conditions change and improve, tests will be made frequently to determine whether the tie can be tolerated.

A specific request for river stages between 5 and 13 feet at St. Joseph, Mo., was made by a spokesman from that city. He requested that sufficient water be released to maintain the minimum stage at 5 feet at all times; and that releases not contribute to a higher stage than 13 feet.

Under current conditions a 5-foot stage corresponds to a discharge of approximately 11,000 cubic feet per second and a 13-foot stage corresponds to a discharge of approximately 60,000 cubic feet per second. The committee agrees that it would be very desirable to maintain the river within these limits at St. Joseph, and the long-range outlook is for the river to be regulated within these limits a very large proportion of the time. However, under conditions of abnormally low-water supply and tributary inflow, particularly when complicated by ice jams interrupting flows upstream from St. Joseph, maintenance of the minimum stage requested at all times will be impracticable. Similarly there will be times when heavy rains in the area immediately upstream from St. Joseph will add to releases which already have left Gavins Point to raise the St. Joseph stage well above 13 feet. Also, certain minimum releases must be made from Gavins Point to serve minimum requirements in the reaches immediately below the dam, and for power purposes.

Thus the committee is in no position to guarantee river levels between 5- and 13-foot stage at St. Joseph all the time. These limits will be kept in mind as desirable objectives, and provided for as much of the time as practical.

The importance of control of Missouri River discharges to flood control, navigation, and water supply on the Mississippi River was pointed out by another witness. He suggested that while the committee's primary responsibility is to the interests within the Missouri Basin, it should not lose sight of the vital part that Missouri River discharges play in the economic life of the lower Mississippi Valley.

The committee understands that regulation of the main stem reservoirs for Missouri River purposes ordinarily will benefit the Mississippi River. In special cases for urgent need on the Mississippi River over and beyond requirements for the Missouri River, the committee has and will give special consideration to such special assistance to the Mississippi River as may be appropriate and practical.

A witness from the area suggested that uniform releases from Gavins Point without any great stage fluctuations would be very desirable to minimize bank erosion along the Missouri River downstream.

The general pattern for operation of Gavins Point minimizes daily cyclic power fluctuations, and provides for less fluctuation in river stages than existed previously in the natural river. However, moderate day-to-day changes in releases from Gavins Point as downstream requirements vary are essential for conservation of storage water, and substantial reductions in releases are necessary occasionally for reductions in heights of downstream floods. The committee agrees that uniformity of releases is a generally desirable objective, within the foregoing requirements.

SUGGESTIONS ON OTHER MATTERS

Suggestions were made to the committee that fish and game management studies be made during preimpoundment stages of project planning; and that consideration be given to construction of "just above water line" dams around Fort Peck Reservoir. As pointed out early in this report, consideration of items of this nature is not a function of the coordinating committee.

At the close of the public meeting it was suggested that all future meetings of the coordinating committee be opened to a reasonable number of representatives of the press. The committee has agreed to hold another public meeting in the spring of 1959 which will be open to the press. It will follow the general pattern of the public meeting held last spring. This public meeting will afford various interests throughout the Missouri Basin, who have an interest in the operation of the main stem Missouri River reservoirs, an opportunity to attend and offer comments or recommendations.

However, the committee feels that it would be impractical to open all the technical working meetings of the coordinating committee to the general public and the press, since this would hamper the committee members in their technical discussions of the great number of details of reservoir operations which must be considered. All decisions reached at the technical meetings are later reviewed in open public meetings of the Missouri Basin Inter-Agency Committee.

As a means of keeping the press and public informed of the coordinating committee's activities at the technical meetings, consideration is being given to issuance of a factual news release at the close of such technical sessions.

All members of the committee hold the basic concept that it has an obligation to give full information to the public on its decisions affecting the regulation of main stem reservoirs and how they are reached.

COMMENTS RELATING TO STUDY OF POSSIBLE DISPOSITION OF MISSOURI RIVER BASIN POWER

In response to the public notice on August 5, 1957, for applications for Missouri River Basin project power, more than 250 applications have been received. The aggregate of the applications are: for 1961—1,693,000 kilowatts; for 1963—1,354,000 kilowatts; and for 1965—1,648,000 kilowatts. The area covered by these applications is the main-stem area of the Missouri River Basin project east of Fort Peck, Mont.

The powerplants considered as being in service to meet area requirements are Fort Peck (excluding 1 unit serving the area west of Fort Peck), Garrison, Oahe, Fort Randall, and Gavins Point. The firm power capabilities of these plants are controlled by winter conditions. Based upon studies of the Corps of Engineers, the estimated amounts of firm power available, at load, for December peak, are as follows:

	Kilowatts
1961	695,000
1962	781,000
1963	970,000
1964	1,005,000
1965	1,033,000

The Bureau considers that a relationship of power supply to loads rather than to applications for power is more meaningful since it is apparent that the Federal power supply is but a fraction of the future preference-type loads in the area. On a supply-to-load basis, analysis showed that use of estimated 1963 loads appeared to be most logical. The estimates of the winter peak loads of that year as reported by preference-type applications were 2,068,000 kilowatts, which included some duplications as well as loads outside the established marketing area.

Several applicants for power presently have relatively efficient assured capacity in existing and planned thermo-generating plants—assured capacity meaning total capacity minus the largest unit held as reserve. The Bureau believes such assured capacity should continue to be used and that deduction of such capacity should be made from estimated loads before arriving at a "net load" estimate on which allocation of power would be based. After making adjustment for the factors enumerated, the 1963 net load peak to be supplied from the Federal power supply is 1,092,558 kilowatts.

The ratio of firm power available for sale to net load to be supplied at the 1963 winter peak is 88 percent.

Attached is a tabulation showing for each applicant, the status of its 1954 power allocation, if any; its application for power; its estimated 1963 winter peak load both before and after adjustments; and the portion of the adjusted load which could be supplied by the Bureau on a general basis of basinwide application of the ratio of power supply to estimated load to be served by such supply.

DRAFT OF
11-14-58

Study of Possible Disposition of Missouri River Basin Project Firm Power
Eastern Division, Eastern Area

SUMMARY

	(1) 1954 Power Allotments	(2) 1954 Allotments Not Under Contract	(3) Customer Applications for Power 1963	(4) Customer 1963-64 Winter Peak Loads as Adjusted by Bureau of Reclamation	(5) Bureau Power Supply Will Meet 80% of Col. 4 Totals*
			Kilowatts		
SUMMARY					
Montana	19,350	0	34,660	26,393	23,270
North Dakota	80,795	3,675	198,265	167,766	150,930
South Dakota					
Total allotments	155,465				
Allotments rescinded	3,200				
Remaining allotments	152,265	9,315	235,370	211,442	204,152
Minnesota					
Total allotments	125,810				
Allotments rescinded	1,380				
Remaining allotments	124,430	9,440	298,712	310,792	273,760
Iowa	61,855	1,050	152,471	155,439	136,910
Nebraska					
Total allotments	117,200				
Allotments rescinded	400				
Remaining allotments	116,800	11,700	259,415	220,726	201,490
Total					
Allotments	560,475				
Allotments rescinded	4,980				
Remaining allotments	555,495	35,180	1,178,893	1,092,558	990,512

* See detail on the State tabulations.

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11-14-58

Study of Possible Disposition of Missouri River Basin Project Firm Power
Eastern Division, Eastern Area

MONTANA

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 80% of Col. 6 Totals	Description of Adjustments
MONTANA				Kilowatts				
COOPERATIVES:								
Goldenwest	1,170	0	1,450	1,450	0	1,450	1,280	
Lower Yellowstone	3,290	0	4,615	4,615	0	4,615	4,070	
McCone County	5,200	0	7,150	7,150	0	7,150	6,300	
Mid-Yellowstone	1,715	0	2,300	2,300	0	2,300	2,030	
Northern (Wolf Point)	465	0	4,360	4,360	-3,777	583	520	For portion of system in Western Area.
Sheridan County	5,400 /1	0	10,270	10,270	-3,000	7,270	6,400	Prospective load of Federal establishment.
Southeast	1,515	0	2,275	2,275	0	2,275	2,010	
Tongue River (Miles City, O'Fallon)	495	0	625	2,725	-2,100	625	550	For portion of system in Western Area.
Valley County (Wolf Point)	100	0	1,615	1,615	-1,490	125	110	For portion of system in Western Area.
Cooperative Subtotal	19,350	0	34,660	36,760	-10,367	26,393	23,270	
MONTANA STATE TOTAL	19,350	0	34,660	36,760	-10,367	26,393	23,270	

/1 Assumes reduction of 900 kw on January 1, 1959.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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Study of Possible Disposition of Missouri River Basin Project Firm Power
Eastern Division, Eastern Area

NORTH DAKOTA

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application For Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
NORTH DAKOTA				Kilowatts				
COOPERATIVES								
Burke-Divide	2,575	0	3,885	3,885	0	3,885	3,420	
Capital (Bismarck, Menoken)	1,150	0	2,640	3,600	-1,375	2,225	1,960	For loads served by Central Power Elec. Coop., 960 kw; for power from Dakotas Electric capacity, 415 kw.
Central Power	0	0	50,200	50,185	-16,500	33,685	29,650	For efficient generation, 15,000 kw; prospective load of Federal establishment, 1,500 kw.
James Valley (Fredonia, Ellendale)	1,610	0	2,370	6,850	-4,855	1,995	1,760	For loads served by Central Power Elec. Coop., 4,480 kw; for power from Dakotas Electric capacity, 375 kw.
KEM	3,550	0	9,686	9,686	-1,520	8,166	7,190	For power from Dakotas Electric capacity.
McKenzie	2,560	0	6,500	6,500	-125	6,375	5,610	For power from Dakotas Electric capacity.
Minnkota (N.D. Portion)	30,135	0	46,500	46,500	-3,400	43,100	37,930	For prospective load of Federal establishments.
Mor-Gran-Sou	4,990	0	6,500	6,500	-1,020	5,480	4,990*	For power from Dakotas Electric capacity.
Mountrail	2,570	0	3,800	3,800	0	3,800	3,350	
North Central (Mohall)	1,110	0	1,327	5,632	-4,305	1,327	1,170	For loads served by Central Power Elec. Coop.
Oliver-Mercer	2,000	0	3,684	3,684	-1,274	2,410	2,130	For indefinite prospective load, 824 kw; for power from Dakotas Electric capacity, 450 kw.
Slope	3,525	0	4,900	4,900	-770	4,130	3,640	For power from Dakotas Electric capacity.
Verendrye (Carpio)	500	0	730	12,375	-11,645	730	650	For load served by Central Power Elec. Coop.
West Plains	5,030	0	6,500	6,500	-2,285	4,215	5,030*	For prospective load of Federal establishment, 1,500 kw; for power from Dakotas Electric capacity, 785 kw.
Williams	2,630	0	8,785	8,785	-5,000	3,785	3,340	For indefinite prospective load.
Cooperative Subtotal	63,935	0	158,007	179,382	-54,074	125,308	111,820	

* Amount of 1954 allotment.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

DRAFT OF
11-14-58

Study of Possible Disposition of Missouri River Basin Project Fire Power
Eastern Division, Eastern Area

NORTH DAKOTA (cont)

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application For Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
NORTH DAKOTA (cont)				Kilowatts				
MUNICIPALS								
Cavalier	1,000	0	1,460	1,460	0	1,460	1,290	
Grafton	2,735	0	3,800	3,800	0	3,800	3,350	
Hillsboro	0	0	1,094	1,094	0	1,094	970	
Hope	0	0	374	374	0	374	330	
Lakota	750	100	1,020	1,020	0	1,020	900	
Maddock	0	0	605	605	0	605	540	
Northwood	0	0	1,060	1,060	0	1,060	940	
Park River	900	0	1,350	1,350	0	1,350	1,190	
Sharon	0	0	140	140	0	140	130	
Valley City	2,500	0	4,600	6,600	0	6,600	5,810	
Municipal Subtotal	7,885	100	15,503	17,503	0	17,503	15,450	
OTHER								
State of North Dakota △	8,975	3,575	10,451	10,651	0	10,651	9,380	
Grand Forks AFB	0	0	8,000	8,000	0	8,000	8,000**	
Minot AFB	0	0	6,000	6,000	0	6,000	6,000**	
N.D. Air National Guard	0	0	194	194	0	194	180	
Williams County, N.D.	0	0	110	110	0	110	100	
"Other" Subtotal	8,975	3,575	24,755	24,955	0	24,955	23,660	
NORTH DAKOTA STATE TOTAL	80,795	3,675	198,265	221,[illegible]0	-54,074	167,766	150,930	

△ For detail see attachment.

** Federal establishments assigned 100% of 1963 loads.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

Study of Possible Disposition of Missouri River Basin Project Firm Power
Eastern Division, Eastern Area

SOUTH DAKOTA

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
SOUTH DAKOTA				Kilowatts				
COOPERATIVES								
Cam-Wal	2,400	0	3,500	3,500	-550	2,950	2,600	For power from Dakotas Electric capacity.
Central Electric	1,200	0	2,100	2,100	-330	1,770	1,560	For power from Dakotas Electric capacity.
Cherry-Todd	2,200	0	2,750	2,750	0	2,750	2,420	
East River	62,450 /1	0	107,181	107,181	-220	106,961	94,130	For duplication of Fukwana and one S.D. State loads.
FEM	2,700	0	3,717	3,717	-585	3,132	2,760	For power from Dakotas Electric capacity.
Grand	3,090	0	4,180	4,180	-655	3,525	3,110	For power from Dakotas Electric capacity.
Moreau-Grand	2,330	0	4,950	4,950	-2,464	2,486	2,330*	For prospective load of Federal establishments, 1,684 kw; for power from Dakotas Electric capacity, 780 kw.
Northern (Frederick)	670 /1	0	875	875	-140	735	670*	For power from Dakotas Electric capacity.
Rosebud	4,000	0	6,200	6,200	0	6,200	5,460	
Rushmore G&T	11,960	0	18,669	18,669	-22,000	0	11,960*	For power from own generating capacity.
Cooperative Subtotal	93,000	0	134,122	134,122	-26,944	130,509	127,000	
MUNICIPALS								
Aberdeen	550	0	1,500	1,500	-1,080	420	550*	Reduced from summer peak to winter requirement.
Arlington	900	0	880	880	0	880	900*	
Badger	250	0	255	255	0	255	250*	
Beresford	800	0	1,140	1,140	0	1,140	1,010	
Big Stone City	325	0	380	380	0	380	340	
Brookings	3,000	0	7,566	7,566	0	7,566	6,660	
Bryant	400	0	505	505	0	505	450	
Burke	550	0	570	570	0	570	550*	
Elk Point	0	0	715	715	0	715	630	
Estelline	0	0	600	600	0	600	530	

/1 Reflects transfer of load from Northern (Frederick) to East River, and corresponding transfer of allocation (150 kw).

* Amount of 1954 allotment.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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SOUTH DAKOTA (cont)

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 80% of Col. 6 Totals	Description of Adjustments
SOUTH DAKOTA (cont)				Kilowatts				
MUNICIPALS (cont)								
Faith	0	0	680	680	0	680	600	
Flandreau	1,800	150	1,560	1,560	0	1,560	1,800*	
Fort Pierre	700	0	1,500	1,500	0	1,500	1,320	
Groton	700	0	770	770	0	770	700*	
Hecla	220	0	350	350	0	350	310	
Howard	750	0	1,000	1,000	0	1,000	880	
Langford	175	0	260	260	0	260	230	
Madison	3,550	0	4,460	4,460	0	4,460	3,930	
Miller	1,100	0	1,800	1,800	0	1,800	1,590	
Onida	475	475	695	695	0	695	620	
Parker	750	0	880	880	0	880	780	
Pierre	4,970	0	7,950	7,950	-475	7,475	6,580	For duplication for S.D. State loads.
Plankinton	550	0	640	640	0	640	570	
Pukwana	0	0	145	145	0	145	130	
Sioux Falls	4,000	0	4,070	4,070	0	4,070	4,000*	
Tyndall	0	0	845	845	0	845	750	
Valley Springs	0	0	185	185	0	185	170	
Vermillion	2,400	0	3,050	3,050	0	3,050	2,690	
Volga	600	0	925	925	0	925	820	
Watertown	7,000	0	10,650	10,650	0	10,650	9,380	
Wessington Springs	0	0	830	830	0	830	730	
Winner	2,000	0	2,520	3,060	0	3,060	2,700	
Municipal Subtotal	38,315	625	59,876	60,416	-1,555	58,861	53,150	
OTHER								
State of South Dakota △	10,000	7,940	12,450	13,150	0	13,150	11,580	
Ellsworth AFB	10,000	0	6,500	6,500	0	6,500	10,000*	
USAF, Pickstown	750	750	2,422	2,422	0	2,422	2,422**	
"Other" Subtotal	20,750	8,690	21,372	22,072	0	22,072	24,002	
SOUTH DAKOTA STATE TOTAL	152,265	9,315	235,370	236,610	-28,499	211,442	204,152	

△ For detail see attachment.

* Amount of 1954 allotment.

** Federal establishments assigned 100% of 1963 loads.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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Eastern Division, Eastern Area

MINNESOTA

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
MINNESOTA				Kilowatts				
COOPERATIVES								
Cooperative Power △	52,600	0	121,543	142,793	-23,580	119,213	104,980	For load outside market area.
Itasca-Mantrap	615	615	3,450	3,450	-2,020	1,430	1,260	For load outside market area, 1,930 kw; for reduction from summer peak to winter requirement, 90 kw.
Minnesota Valley	5,200	0	14,000	14,000	0	14,000	12,320	
Minnkota (Minn. Portion)	20,090	0	28,100	43,200	-15,100	28,100	24,730	For load outside market area.
Rural Cooperative Power	2,500	0	6,850	69,700	-62,850	6,850	6,030	For load outside market area.
Southwestern Minnesota	5,000	0	8,100	8,100	0	8,100	7,130	
Cooperative Subtotal	86,005	615	182,043	281,243	-103,550	177,693	156,450	
MUNICIPALS								
Ada	0	0	1,400	1,400	0	1,400	1,240	
Adrian	0	0	1,180	1,180	0	1,180	1,040	
Alexandria	2,500	1,500	3,500	5,450	0	5,450	4,800	
Alpha	0	0	200	200	0	200	180	
Barnesville	0	0	1,250	1,100	0	1,100	970	
Benson	1,200	1,200	2,400	2,400	0	2,400	2,120	
Bigelow	0	0	224	224	0	224	200	
Bluffton	0	0	107	107	0	107	100	
Breckenridge	0	0	2,970	2,970	0	2,970	2,620	
Brewster	0	0	450	450	0	450	400	
Detroit Lakes	1,000	0	1,500	4,450	0	4,450	3,920	
East Grand Forks	0	0	4,100	4,100	0	4,100	3,610	
Fairfax	0	0	1,460	1,460	0	1,460	1,290	
Fosston	1,200	0	1,430	1,430	0	1,430	1,260	
Grove City	0	0	643	643	0	643	570	
Halstad	0	0	960	960	0	960	850	
Hawley	275	275	970	970	0	970	860	
Henning	0	0	710	710	0	710	630	
Jackson	300	300	2,080	2,080	0	2,080	1,830	
Kandiyohi	0	0	390	390	0	390	350	

△ For detail see attachment.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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MINNESOTA (cont)

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
MINNESOTA (cont)				Kilowatts				
MUNICIPALS (cont)								
Lake Park	300	0	370	370	0	370	330	
Lakefield	0	0	1,270	1,270	0	1,270	1,120	
Litchfield	2,400	2,400	5,840	5,840	0	5,840	5,140	
Luverne	500	0	3,430	3,430	0	3,430	3,020	
Madison	900	900	1,300	2,400	0	2,400	2,120	
Marshall	1,100	0	2,900	5,300	0	5,300	4,670	
Melrose	0	0	2,100	2,100	0	2,100	1,850	
Moorhead	14,000	0	23,000	22,500	0	22,500	19,800	
Newfolden	0	0	200	200	0	200	180	
Nielsville	0	0	132	132	0	132	120	
Olivia	700	0	1,920	1,920	0	1,920	1,690	
Ortonville	900	0	2,170	2,170	0	2,170	1,910	
Perley	0	0	150	150	0	150	140	
Redwood Falls	2,100	0	3,590	3,590	0	3,590	3,160	
Russell	0	0	580	580	0	580	510	
Sauk Centre	1,200	0	2,280	2,280	0	2,280	2,010	
Shelly	0	0	158	158	0	158	140	
Sleepy Eye	0	0	2,900	2,900	0	2,900	2,560	
Springfield	0	0	2,750	2,750	0	2,750	2,420	
St. James	1,100	0	3,450	3,450	0	3,450	3,040	
Stephen	0	0	690	690	0	690	610	
Thief River Falls	4,100	0	7,300	7,300	0	7,300	6,430	
Tyler	400	0	965	965	0	965	850	
Wadena	2,250	2,250	3,810	3,810	0	3,810	3,360	
Warren	0	0	1,730	1,730	0	1,730	1,530	
Westbrook	0	0	1,120	1,120	0	1,120	990	
Willmar	0	0	3,900	10,080	0	10,080	8,870	
Windom	0	0	3,590	3,590	0	3,590	3,160	
Worthington	0	0	5,150	7,650	0	7,650	6,740	
Municipal Subtotal	36,135	8,825	116,669	133,099	0	133,099	117,310	
MINNESOTA STATE TOTAL	124,430	9,440	298,712	414,342	-103,550	310,792	273,760	

Note A. Customer's estimated load is subject to review prior to final allocation of power.

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
IOWA				Kilowatts				
COOPERATIVES								
Corn Belt	0	0	29,600	84,500	-54,900	29,600	26,050	For load outside market area.
Glidden	0	0	4,700	4,700	0	4,700	4,140	
Lyon	3,300	0	6,300	6,300	0	6,300	5,550	
Northwest Iowa	44,155	0	53,555	53,555	0	53,555	47,130	
Osceola	1,750	0	2,906	2,906	0	2,906	2,560	
Southwestern Federated	0	0	10,880	10,880	0	10,880	9,580	
Cooperative Subtotal	49,205	0	107,941	162,841	-54,900	107,941	95,010	
MUNICIPALS								
Alta	0	0	800	800	0	800	710	
Anita	0	0	560	560	0	560	500	
Atlantic	0	0	5,000	5,700	0	5,700	5,020	
Coon Rapids	0	0	1,400	1,500	0	1,500	1,320	
Corning	0	0	1,550	2,190	0	2,190	1,930	
Denison	1,800	0	2,500	3,200	0	3,200	2,820	
Grastinger	0	0	560	560	0	560	500	
Harlan	1,900	0	4,290	4,290	-220	4,070	3,590	For duplication of load of Shelby, Iowa.
Hawarden	1,000	0	1,600	1,670	0	1,670	1,470	
Kimballton	0	0	300	300	0	300	270	
Lake Park	0	0	1,300	1,300	0	1,300	1,150	
Laurens	700	700	1,200	1,500	0	1,500	1,320	
Lenox	0	0	700	680	0	680	600	
Manilla	350	350	600	600	0	600	530	
Manning	800	0	1,450	1,450	0	1,450	1,280	
Mapleton	500	0	1,200	860	0	860	760	
Milford	0	0	820	780	0	780	690	
Onawa	2,000	0	2,800	2,800	0	2,800	2,470	
Orange City	0	0	880	1,590	0	1,590	1,400	
Paullina	0	0	660	660	0	660	590	
Primghar	500	0	1,000	1,000	0	1,000	880	
Remsen	500	0	1,000	1,000	0	1,000	880	
Rock Rapids	1,500	0	2,000	2,360	0	2,360	2,080	
Sanborn	400	0	1,330	1,330	0	1,330	1,170	
Shelby	0	0	188	220	0	220	200	
Sibley	0	0	3,500	3,700	-224	3,476	3,060	For duplication of load for Rigelow, Minnesota.
Sioux Center	700	0	2,170	2,170	0	2,170	1,910	
Villisca	0	0	1,550	1,550	0	1,550	1,370	
Walnut	0	0	600	600	0	600	530	
Woodbine	0	0	1,022	1,022	0	1,022	900	
Municipal Subtotal	12,650	1,050	44,530	47,942	-444	47,498	41,900	
IOWA STATE TOTAL	61,855	1,050	152,471	210,783	-55,344	155,439	136,910	

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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NEBRASKA

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
NEBRASKA				Kilowatts				
NPPS AND CLASS I CUSTOMERS								
Nebraska PPS	98,200	-	-	-	-	-		
Beatrice	1,800	-	-	-	-	-		
Subtotal	100,000	0	150,000	412,000	-269,000	143,000		For efficient generation.
CLASS II CUSTOMERS								
Auburn	1,100	0	3,300	3,786	0	3,786		
Blair	1,200	1,200	3,030	2,900	0	2,900		
Broken Bow	1,200	1,200	3,000	2,700	0	2,700		
Curtis	0	0	540	640	0	640		
DeWitt	300	0	530	580	0	580		
Fairbury △	2,800	0	0	-	-	-		
Fremont	6,000	6,000	10,000	22,500	-14,000	8,500		For efficient generation.
Grand Island	0	0	11,500	24,000	-12,500	11,500		For efficient generation.
Hastings	0	0	12,500	23,000	-15,500	7,500		For efficient generation.
Nebraska City	0	0	9,140	9,140	-700	8,440		For duplication of load in Nebraska Public Power System load estimate.
Pender △	500	500	0	-	-	-		
Schuyler △	1,200	1,200	0	-	-	-		
Spalding	0	0	380	380	0	380		
Stuart	0	0	70	300	0	300		
Wakefield △	400	400	0	-	-	-		
Wayne	1,200	1,200	2,750	2,250	0	2,250		
West Point	900	0	1,500	1,625	0	1,625		
Winside	0	0	225	225	0	225		
Class II Subtotal	16,800	11,700	58,465	94,026	-42,700	51,326		
Total available for customers in NPPS service area - to be apportioned by Planning Board	116,800	11,700	208,465	506,026	-311,700	194,326	175,950***	
OTHER								
Lincoln AFB	0	0	5,600	5,600	0	5,600	5,600**	
Offutt AFB	0	0	13,600	13,600	0	13,600	13,600**	
Omaha PPD	0	0	30,000	380,000	-400,000	0	0	
University of Nebraska	0	0	1,750	7,200	0	7,200	6,340	For efficient generation.
"Other" Subtotal	0	0	50,950	406,400	-400,000	26,400	25,540	
NEBRASKA STATE TOTAL	116,800	11,700	259,415	912,426	-711,700	220,726	201,490	

** Federal establishments assigned 100% of 1963 loads.
*** Includes 4,900 kw of 1954 allotments to 4 customers △ not reapplying.

△ Did not apply for power in addition to 1954 allotment.
Note A. Customer's estimated load is subject to review prior to final allocation of power.

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SUPPLEMENTAL TABULATION

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 80% of Col. 6 Totals	Description of Adjustments
NORTH DAKOTA				Kilowatts				
STATE OF NORTH DAKOTA								
State Board of Higher Ed.:								
U. of N.D., Grand Forks				2,037	0	2,037		
Ag. Coll., Fargo		/1		1,720	0	1,720		
Sch. of Sci., Wahpeton				750	0	750		
Sch. of For., Bottineau				174	0	174		
Tch. Coll., Dickinson		/1		300	0	300		
Tch. Coll., Ellendale		/1		170	0	170		
Tch. Coll., Mayville		/1		455	0	455		
Tch. Coll., Minot		/1		590	0	590		
Tch. Coll., Valley City		/1		110	0	110		
Subtotal			6,306	6,506	0	6,506		
State Board of Admin.:								
St. Hosp., Jamestown				1,020	0	1,020		
T.B. San., San Haven		/1		230	0	230		
Grafton Sch., Grafton				295	0	295		
Subtotal			1,545	1,545	0	1,545		
N.D. Mill & Elevator			2,600	2,600	0	2,600		
TOTAL	8,975	3,575	10,451	10,651	0	10,651	9,380	

/1 The Bureau of Reclamation has completed no contract for firm power service and none has been supplied.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

ee Federal establishments assigned 100% of 1963 loads.
eee Includes 4,900 kw of 1954 allotments to 4 customers /1 not reapplying.

/1 Did not apply for power in addition to 1954 allotment.
Note A. Customer's estimated load is subject to review prior to final allocation of power.

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SUPPLEMENTAL TABULATION

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 88% of Col. 6 Totals	Description of Adjustments
SOUTH DAKOTA				Kilowatts				
STATE OF SOUTH DAKOTA								
U. of S.D., Vermillion				2,000	0	2,000		
State Coll., Brookings				2,100	0	2,100		
Sch. of Mines, Rapid City		1/		400	0	400		
Tch. Coll., Aberdeen		1/		150	0	150		
Tch. Coll., Madison		1/		75	0	75		
Tch. Coll., Spearfish		1/		130	0	130		
Tch. Coll., Springfield		1/		100	0	100		
Redfield State Hosp.				500	0	500		
Sanatorium, Sanator		1/		135	0	135		
Yankton State Hosp.				250	0	250		
Penitentiary, Sioux Falls		1/		260	0	260		
Sch. for Blind, Gary		1/		40	0	40		
Sch. for Deaf, Sioux Falls		1/		55	0	55		
Training Sch., Plankinton		1/		75	0	75		
Soldiers Home, Hot Springs		1/		155	0	155		
Cement Plant, Rapid City		1/		6,000	0	6,000		
Fair Board, Huron		1/		75	0	75		
Game,Fish,& Parks, Custer		1/		175	0	175		
State Highways		1/		125	0	125		
State Home, Pierre		1/		350	0	350		
State Subtotal	10,000	7,940	12,450	13,150	0	13,150	11,580	

1/ The Bureau of Reclamation has completed no contract for firm power service and none has been supplied.

Note A. Customer's estimated load is subject to review prior to final allocation of power.

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SUPPLEMENTAL TABULATION

Applicant	(1) 1954 Power Allotment	(2) 1954 Allotment Not Under Contract	(3) Customer Application for Power 1963	(4) 1963-64 Winter Peak Load (See Note A) Estimated by Customer	(5) Adjustments by Bureau of Reclamation	(6) Bureau Power Needed to Meet Customer Adjusted Load	(7) Bureau Power Supply Will Meet 85% of Col. 6 Totals	Description of Adjustments
MINNESOTA				Kilowatts				
COOPERATIVE POWER ASSOCIATION								
Agra-Lite	3,800	0	9,900	9,900	0	9,900	8,720	
Brown County	2,300	0	7,140	9,710	-2,570	7,140	6,290	For load outside market area.
Federated Rural	4,200	0	8,950	11,200	-2,250	8,950	7,880	For load outside market area.
Lake Region	12,900	0	16,958	16,958	0	16,958	14,930	
Lyon-Lincoln	2,300	0	5,800	5,800	0	5,800	5,110	
Mcleod	1,000	0	2,470	11,270	-8,800	2,470	2,180	For load outside market area.
Meeker	2,500	0	5,950	9,160	-3,210	5,950	5,240	For load outside market area.
Nobles	3,800	0	11,700	11,700	0	11,700	10,300	
Redwood	2,000	0	6,520	6,520	0	6,520	5,740	
Renville-Sibley	1,900	0	5,375	5,375	0	5,375	4,730	
Runestone	3,400	0	9,460	9,460	0	9,460	8,330	
South Central	3,300	0	9,680	9,680	-830	8,850	7,790	For load outside market area.
Stearns	3,300	0	9,980	14,060	-4,080	9,980	8,790	For load outside market area.
Todd-Wadena	4,500	0	7,900	8,240	-1,840	6,400	5,640	For load outside market area, 340 kw; for load of Federal establishment, 1,500 kw.
Traverse	1,400	0	3,760	3,760	0	3,760	3,310	
TOTAL	52,600	0	121,543	142,793	-23,580	119,213	104,980	

Note A. Customer's estimated load is subject to review prior to final allocation of power.

SUPPLEMENTAL TABULATION

North Dakota

Central Power Electric Cooperative

	Efficient Units
Wm. J. Neal Plant, Voltaire	15,000 kw
Wm. J. Neal Plant, Voltaire	15,000
Total	30,000
Less largest unit for reserve	15,000
Assured capacity	15,000

Minnkota Power Cooperative

	Efficient Units
Franklin P. Wood Plant, Grand Forks, N.D.	11,500 kw
Franklin P. Wood Plant, Grand Forks, N.D.	5,000
Franklin P. Wood Plant, Grand Forks, N.D.	5,000
Hydroelectric Plant	100
Total	21,600
Less largest unit as reserve	11,500
Assured capacity	10,100
Less requirement for load outside market area	10,100
Assured capacity for market area	0

North Dakota and South Dakota

Dakotas Electric Cooperative

	Efficient Units
Beulah, North Dakota, Unit	8,500 kw

Unit operated by Montana-Dakota Utilities Co., which has contracted to supply 8,500 kw of firm power to members of Dakotas Electric Cooperative. This amount has been assigned by the Bureau of Reclamation for this study as efficient generation to the various members of Dakotas Electric Cooperative in proportion to their estimated 1963-64 winter loads, as noted for individual cooperatives.

South Dakota

Rushmore G&T Electric Cooperative

	Efficient Units
Osage, Wyoming, Unit	10,000 kw
Kirk Plant, Lead, S.D., Unit	16,500
Total	26,500

Units operated by Black Hills Power and Light Company, which has contracted to supply Rushmore G&T Electric Cooperative with 26,500 kw of firm power. From this total, 4,500 kw has been subtracted for load served by Rushmore G&T Electric Cooperative outside the market area. Assured capacity for load in market area - 22,000 kw.

Iowa

Southwestern Federated Power Cooperative

	Efficient Units
Creston No. 2 Plant, Creston, Iowa	7,500 kw
Creston No. 2 Plant, Creston, Iowa	7,500
Creston No. 2 Plant, Creston, Iowa	7,500
Total	22,500
Less largest unit for reserve	7,500
Assured capacity	15,000
Less requirement for load outside market area	17,020
Remainder for load inside market area	0

Corn Belt Power Cooperative

	Efficient Units
Humboldt Plant	7,500 kw
Humboldt Plant	7,500
Humboldt Plant	11,500
Humboldt Plant	15,000
Wisdom Plant	33,000
Total	74,500
Less largest unit for reserve	33,000
Assured capacity	41,500
Less requirement for load outside market area	54,900
Assured capacity for market area	0

Nebraska

City of Fremont

	Efficient Units
City's generating plant	4,000 kw
City's generating plant	10,000
City's generating plant	16,500
Total	30,500
Less largest unit as reserve	16,500
Assured capacity	14,000

City of Grand Island

	Efficient Units
City's generating plant	5,000 kw
City's generating plant	7,500
City's generating plant	16,500
Total	29,000
Less largest unit for reserve	16,500
Assured capacity	12,500

Detail Relating to Efficient Operation (cont)

SUPPLEMENTAL TABULATION

Nebraska (cont)

City of Hastings

	Efficient Units
City's generating plant	3,500 kw
City's generating plant	6,000
City's generating plant	6,000
City's generating plant	16,500
Total	32,000
Less largest unit for reserve	16,500
Assured capacity	15,500

Omaha Public Power District

	Efficient Units
North Omaha Plant	75,000 kw
North Omaha Plant	100,000
North Omaha Plant	100,000
North Omaha Plant	125,000
South Omaha Plant	15,000
South Omaha Plant	5,000
Jones St. Plant	40,000
Jones St. Plant	30,000
Jones St. Plant	10,000
Jones St. Plant	25,000
Total	525,000
Less largest unit for reserve	125,000
Assured capacity	400,000

Nebraska Public Power System

	Efficient Units
Hydro Plant Totals	
Johnson No. 1	18,000 kw
Johnson No. 2	16,000
Jeffrey	16,000
North Platte	24,000
Steam Plants	
Kramer	30,000
Kramer	30,000
Kramer	30,000
K Street	15,000
Canaday	100,000
Sheldon	90,000
Total	369,000
Less largest unit for reserve	100,000
Assured capacity	269,000

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Applications Not Considered for Allotments

SUPPLEMENTAL TABULATION

	1961 Application	1963 Application	1965 Application
		Kilowatts	
I. Applicants whose loads are entirely outside the market area			
Minnesota			
Faribault County Cooperative Elec. Assn.	3,320	3,630	3,940
City of Bagley	900	1,000	1,200
Iowa			
Algona Municipal	4,500	4,900	5,300
II. Municipalities applying which do not have electric distribution systems			
North Dakota			
City of Aneta	310	350	400
City of Finley	620	900	1,200
City of Linton	2,500	3,000	4,000
City of Mandan	11,000	12,750	14,700
City of Watford City	1,170	1,320	1,500
South Dakota			
City of Castlewood	585	708	857
City of Chamberlain	1,770	2,140	2,580
City of Hot Springs	1,600	1,634	1,666
City of Milbank	3,000	2,500	4,000
City of Salem	870	980	1,100
III. Nonpreference-type applicants			
North Dakota			
Otter Tail Power Company	85,000	107,000	134,000
South Dakota			
Central Electric and Gas Company	2,500	3,000	3,500
Iowa			
Iowa Public Service Company	25,000	30,000	35,000

The CHAIRMAN. Thank you very much.

Mr. FORSETH. Thank you.

The CHAIRMAN. The next witness is R. L. Potts, manager, Burke-Divide Electric Cooperative.

STATEMENT OF R. L. POTTS, MANAGER, BURKE-DIVIDE ELECTRIC COOPERATIVE, NORTH DAKOTA

Mr. POTTS. My name is R. L. Potts. I am manager of the Burke-Divide Electric Cooperative, Inc., situated in the northwest corner of North Dakota with headquarters at Columbus.

In order for the committee to be able to evaluate my testimony, I believe it important that I give a short history of my experience in the rural electric field.

I have been associated with this program since 1946. I started in this field with a consultant engineer firm staking distribution lines. When construction of the lines was started, I became the project engineer responsible for adherence to plans and specifications by the contractor. After completion of construction of the first section of lines I was employed by the cooperative as engineer and work order clerk. This was a small cooperative serving consumers in eastern Montana and western North Dakota. I remained with this cooperative for 2 years and then accepted a more responsible position with a larger cooperative as plant superintendent. In 1957 I was employed by the Burke-Divide Electric Cooperative as manager.

In my experience as manager and in close association with management, two things have been very apparent and essential in establishing feasibility for cooperatives in this marginal area. By marginal area I refer to cooperatives which are serving areas where consumer density hovers around one consumer per mile.

First, they must have a continuing source of cheap wholesale electric power, and second, a source of loan funds at a low and reasonable interest rate. Lacking either of these two things, the cooperatives that have employed me could never have established feasibility and the farmers in this area would still be without the aid of rural electric service.

My own cooperative, the Burke-Divide Electric, serves 1,747 consumers over 1,758 miles of line. As these statistics point out, our density is slightly less than one consumer per mile.

When feasibility of this cooperative was established, recognition was given to the fact that we were a marginal cooperative and that only with low-cost wholesale power and 2-percent interest rate could we be economically sound.

At the present time our financial condition is even more critical than it was in 1945 when we were originally organized. We now have lines constructed to 165 idle services, due primarily to the exodus from the farm, occasioned chiefly by the soil bank plan. This condition creates a double burden on the remainder of our consumers. They must not only retire the debt created in constructing lines to their own farms but they must also assume the burden of repaying the expenditure made in constructing lines to our now idle and dead services. These idle services represent an expenditure in excess of $200,000.

We are now enjoying in our area an industrial development in the form of oil producing.. We need and must have low-cost power if we

are to provide the service necessary to aid this development. Over 100 commercial oil wells are in production within our service boundaries. This development is a major factor in helping to maintain the economy of our project and may be the means of displacing the 165 idle services we now have. In order to facilitate the maximum amount of oil recovery, consistent with good conservation practices, these wells must be pumped. The oil companies are looking to us to provide this service. The location of the wells is so widely scattered that it is not feasible for service to be rendered by anyone other than our cooperative. We, in serving our rural consumers, already have a distribution system in the area.

We assumed a utility responsibility to serve our consumers and all development within the rural area when we organized our cooperative. We are obligated to serve these oil loads without discrimination and without profit.

Mr. Chairman and members of this committee, you could well be our court of last resort. We have, in a sense, a three-barreled shotgun leveled at us, with each barrel loaded with a crippling charge that could well be fatal.

First, the soil bank plan, designed to coax the family-type farmer off the land and send him to the labor market. This will increase the idle and dead services on our rural projects. The soil banker who signs his place over for 5 or 10 years will never come back to the farm. His investment would be too great to ever get back in business.

Second, the proposed interest rate increase, fathered by the administration, which would double or triple our interest charge. This alone would be fatal to any marginal cooperative such as ours.

Third, the allocation of Bureau power by the Department of the Interior. Time and again we have been led to believe that we need not be concerned about the availability of Bureau power to meet our entire needs. The cooperatives in our area founded their feasibility on this premise. The implication was made that the Bureau had accepted public utility responsibility for wholesale power and we had accepted utility responsibility to our consumers.

Now, we find that we are to receive only approximately 85 percent of our needs. This has been occasioned, apparently, by allocating the Missouri Basin power over so large an area and spreading the power so thin that the marginal cooperatives are in jeopardy and likewise the REA loans.

It passes strange that we should have our projects set up under a set of rules that called for 2-percent interest rate on loan funds and a cheap wholesale power supply, and now in the late innings of the game the rules are suddenly changed to the point that we may have to forfeit the game.

Mr. Chairman and members of this committee, times may change and situations may be altered, but the fact that our feasibility was based on low-cost power and 2-percent interest loan funds did not change and will not change. This critical situation applies not only to our cooperative but to many cooperatives in the Missouri Basin area which are faced with the same cold hard problem of power supply and loan funds.

It is therefore crystal clear that an equitable means of allocating Bureau power must be worked out, with special consideration given

to marginal cooperatives, or the original objective of electrifying rural America may be defeated.

The CHAIRMAN. Thank you very much.

Mr. POTTS. Thank you for the opportunity of presenting the statement.

The CHAIRMAN. The next witness is Telford Anderson, Watford City, N. Dak.

You may proceed, Mr. Anderson.

STATEMENT OF TELFORD ANDERSON, WATFORD CITY, N. DAK., PRESIDENT, NORTH DAKOTA STATEWIDE ASSOCIATION OF REA COOPERATIVES; PRESIDENT, DAKOTAS ELECTRIC G. & T. COOPERATIVE; AND MANAGER, McKENZIE COUNTY ELECTRIC COOPERATIVE

Mr. ANDERSON. Mr. Chairman and members of the committee, my name is Telford Anderson, from Watford City, N. Dak. I have been president of the McKenzie County Electric Cooperative since its inception 12 years ago. Our project is located in the western Badlands of North Dakota and we also serve 12 townships in the State of Montana, east of the Yellowstone River. Our project area is primarily range land with about 15 percent of our total 7,128 square miles of area under cultivation. Our average farm approximates 1,300 acres and our ranches average 4,000 acres. Therefore, our density per mile is one of the lowest of any cooperative in the Nation.

McKenzie Electric Cooperative was one of the last areas in North Dakota to be electrified due to the fact that it was difficult for REA to prove its feasibility.

Finally, in 1946 REA agreed to grant us a loan. One of the factors that caused the Rural Electrification Administration to grant us this loan was an unlimited supply of 5-mill power from the Fort Peck and Garrison Dams. At that time there was no doubt in anyone's mind that a project lying halfway between the Garrison and the Fort Peck Dams would ever be short of 5-mill power. Today the story is quite different. The Bureau has constructed large 230-volt transmission lines and has enlarged their marketing area to the point where we will have to go on the open market to obtain power required for our customers. After 1962 this power will undoubtedly cost us in the neighborhood of 1 cent per kilowatt-hour.

When the Army Engineers built the Garrison Dam, 80 miles of bottomland along the Missouri River within our project area was flooded by the Garrison Dam pool. In doing this, 57 of our farm consumers had to sell out their land and homes to the Government. Forty of these farmers were among our highest users since they were located on the Lewis & Clark irrigation project. Since the project's feasibility was questionable from the beginning, the Rural Electrification Administration was at once worried that the loss of these consumers would impair our ability to repay the loan to the government. The McKenzie Electric Cooperative has made this big sacrifice of consumers in order that the Garrison Dam could produce power and we feel the Bureau of Reclamation should consider this factor in its allocation of power to this cooperative.

During the 10 years of operation the cooperative has operated 8 of these years in the red, building up a deficit of $160,000. The past 2 years the cooperative has operated in the black due to an oilfield being developed in our project area. We have built 1,931 miles of line and have 1,400 farms on the project. During the past 2 years some pretty large oil loads have been developing and if we are to become a healthy cooperative financially that can pay its obligations to REA within the next 20 years, it is necessary that we obtain ample power at the 5-mill rate. Electricity is not the only type of energy available in the oilfields, and therefore, we have to be competitive in oilfield pumping. If we have to go out on the open market and buy power at 1 cent wholesale we will price ourselves out of this market.

During the past 3 or 4 years our increase in kilowatt-hours sold had jumped approximately 20 percent per year. Yet, when we talk contract with the Bureau of Reclamation, they will not accept a figure higher than 10 percent a year growth and will not accept any estimates of prospective oil loads in our area. The only large loads they will consider are these for which we can show them a signed contract at the present time.

The officials of the oil production companies in our country have supplied us with letters showing the estimated amount of electricity they plan to use in the next 5 years. Naturally, this estimate is based on new wells which will be drilled and also on the ability of the refineries to sell their finished products. Considering these estimates, our original application of 6,500 kilowatts for 1963 plus the natural growth of other consumers of the cooperative, we now realize that we were estimating way too low.

Our present contract, which expired January 1, 1959, was for 2,560 kilowatts. We asked for an increase of 3,940 kilowatts for 1963 and when the Bureau of Reclamation released their data at the Sioux Falls meeting held last December the McKenzie Electric Cooperative was granted 3,070 kilowatts, which was reasonable. Since that date we were requested to meet with the Bureau of Reclamation at Billings, Mont., and they chopped that allocation they gave us about 90 percent, so it now appears we are going to get an increase of only 870 kilowatts over 1954 allocation, which our engineer estimates will last until 1962.

I should also state that I am president of Dakotas Electric Cooperative and of the North Dakota Statewide Association of Rural Electric Cooperatives. Dakotas Electric Cooperative is a generation cooperative which borrowed money to finance a generating plant which was turned over to the Montana-Dakota Utilities Co. for operation. As a result of this arrangement, to which the Bureau of Reclamation was also a party, the member cooperatives were able to obtain power at Bureau rates a considerable period of time before Bureau power become available and have continued to do so since the Bureau power became available. All of the member cooperatives of Dakotas Electric Cooperative are suffering from the same problems my own cooperative is. It was only as a result of this arrangement that our member cooperatives were able to obtain loans from the REA since feasibility could not be established at the wholesale rates charged by the power companies. Mr. George Cornog, the manager of one of our members, will testify concerning the problems facing his cooperative. Most of the members of our North Dakota Statewide Association are

also going to be penalized by not receiving an adequate amount of Bureau power under the new allocations.

In summing up, I would like to make this observation:

It appears that the Bureau of Reclamation wants to take away the 5-mill power from the otherwise unfeasible projects in western North Dakota and eastern Montana. These cooperatives will lose their 5-mill power and will have to get along with the high-priced power which has to be purchased from the public utilities. We do not feel this is an equitable adjustment of the power from the dams in North Dakota and Montana.

Mr. STONG. You say that the Bureau of Reclamation has refused to consider anticipated oil well loads?

Mr. ANDERSON. Yes. On estimated loads they refused that. They want a written contract that they will need so much power, whether it be 1, 2, or 3 years, or whatever the date might be on that.

Mr. STONG. Did your original request for 3,940 kilowatts include anticipated increase in oil well loads?

Mr. ANDERSON. Our power requirements were based on our engineer's system study. It is very hard to determine an oil load and how big the field is going to be and how much power is required.

Mr. STONG. When they called you down to Billings and reduced your allocation, what reason was given for reducing it?

Mr. ANDERSON. They said there is not enough power to go around and it has to be reallocated differently from the statistical report which was given at Sioux Falls.

Mr. STONG. They didn't reduce it by eliminating anticipated oil well load and things like that?

Mr. ANDERSON. According to this, they did.

Our allocation should have been 6,500 less the 125. We could have lived with that.

Mr. STONG. What was the 125? That was power from Dakotas' electric capacity?

Mr. ANDERSON. I imagine that is what it would be; yes.

The CHAIRMAN. Thank you, Mr. Anderson.

Mr. ANDERSON. Thank you very much, gentlemen, for permitting me to appear before this committee.

The CHAIRMAN. The next witness will be William E. Trommershausen, R. W. Beck & Associates, Columbus, Nebr., engineer for Midwest Electric Consumers Association.

You may proceed, Mr. Trommershausen.

STATEMENT OF WILLIAM E. TROMMERSHAUSEN, R. W. BECK & ASSOCIATES, UTILITY ANALYSTS AND ENGINEERS, SEATTLE, WASH., AND COLUMBUS, NEBR.

Mr. TROMMERSHAUSEN. Mr. Chairman, my name is William E. Trommershausen. I am principal engineer and partner of R. W. Beck & Associates, utility analysts and engineers of Seattle, Wash., and Columbus, Nebr. We were employed by the Midwest Electric Consumers Association to report on the progress that we have noted on the Missouri Basin power development since we appeared before this committee almost 2 years ago. We trust that our analysis of such events as have occurred during this time will assist this com-

mittee in obtaining a better perspective of some of the very complex power marketing problems that have existed and do exist in the Missouri Basin.

TRANSMISSION GRID

In 1957 we reported to this committee that we could not find any clearly defined objectives that were to be met by the Bureau transmission grid then in operation or under construction. Since that date we have not found an answer to this problem, but the following important developments have taken place:

1. Construction is well underway on the Fort Peck-Dawson County-Bismark 230-kilovolt line which will serve to reinforce the power supply facilities in the Dawson County (Glendive, Mont.) and the Williston, N. Dak., areas and integrate the output of the second Fort Peck powerplant with the Garrison and Oahe projects.

2. Construction of a Fort Randall-Columbus, Nebr., 230-kilovolt transmission line by the Nebraska Generation and Transmission Cooperative with funds obtained through an REA loan in lieu of the construction of a similar high voltage, high capacity transmission line by the Bureau of Reclamation as was originally planned.

3. Planned construction by the Bureau of Reclamation at an early date of a 230-kilovolt transmission line extending from Hinton, Iowa, to Creston, Iowa.

4. Planned construction by others, with some participation by the Bureau of a 115-kilovolt transmission line connecting the Bureau's facilities in southwestern South Dakota and western Nebraska—the first such intertie between the western Nebraska-Colorado-Wyoming portion of the Bureau's system and the Missouri Basin system.

We have recently seen an Associated Press release which quoted from a letter to Gov. John E. Davis of North Dakota from Assistant Secretary Aandahl as follows:

> **Now that the Federal transmission system is substantially completed, the marketing of available power is on an equitable basis for all customers without regard to location within the established marketing area.**

With respect to this statement, the clients we serve in North Dakota and Montana have received no specific assurances from the Billings office of the Bureau that the present service arrangements will be adequate to deliver the additional power that will be available from the "second round" power allocation now under consideration. On the other hand, the statement by the Assistant Secretary may mean that the Bureau of Reclamation is not expecting to take the leadership in the planning that is essential to meeting the future power needs of the region through a balanced development of hydro and steam-electric generation by means of an efficient transmission grid. This matter should be promptly clarified for in our opinion, the Missouri Basin cannot afford to be without proper power planning. There should be no vacuum existing in this important field, as an adequate and expanding power supply is essential to the further development of the area.

POWER MARKETING PLAN

In 1957 we reported to this committee on the two plans for power marketing that were considered by the Bureau in 1952, as follows:

1. Operate the Missouri Basin hydroplants for peaking in conjunction with thermal sources to meet the firm power obligations and sell nonfirm energy available during the navigation season as fuel displacement for thermal plants.
2. Sell firm power at normal load factors under a power sales schedule geared to the availability of such power under the Corps of Engineers' construction schedule. Such sales would be made to utilities having generation and those having none, with appropriate contractual arrangements made with those utilities having generation. All nonfirm energy would be sold as fuel displacements.

It is clear from the long-term contracts presently offered that the Bureau expects to continue to follow the plan of selling firm power on a system load factor basis which is plan 2. We have not seen any Bureau reports which discuss the manner in which integration with electric generation can best be accomplished in the region, both from the standpoint of the Federal Government and the power purchasers in this region. In fact, the Bureau has recently introduced a new X/Y formula in power contracts with agencies having generation of their own and those purchasing supplemental power from other suppliers which results in a most complex contractual arrangement and which actually deters the proper base loading of such new thermal generating plants as may be constructed by the preference customers and others.

With respect to the construction of transmission facilities by the Bureau, we recently made the following appraisal for one of our clients—we made it because they were concerned about how they were going to receive the additional power that would be made available through the second round allocation:

There has been a decided tendency on the part of the Bureau of Reclamation to concentrate on the planning and construction of 230-kilovolt transmission lines. Important as such faciilties are to the success of the Bureau's operation, a reasonable balance between 230-kilovolts and 115-kilovolts lines is necessary for it is from 115-kilovolt facilities that firm power deliveries will be made to the majority of the preference customers. You have a definite interest, therefore, in seeing that a portion of the Bureau's annual planning funds are used to study, justify and schedule the construction of a substantial amount of 115-kilovolt transmission lines and associated customer-service substations to make delivery to your respective load centers of the second-round firm power allocation.

We further pointed out to our clients that under present limited power marketing policies of the Bureau, it can be expected that the Bureau would only furnish such additional transmission line capacity, wheeling capacity and customer service substation capacity, as will be needed to deliver the allocated power to the preference customers. In some cases, it was noted that the forthcoming power allocation may fall short of the short-term requirements of some specific areas. Rather than put in new transmission capacity and associated stepdown substation capacity to just watch the Bureau power allocation, the facilities needed for future power supply should be designed for the long-term needs of each specific load center within economic limits. In our discussions with the Bureau staff in the region during 1958,

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we do not find that this problem has been fully recognized. They did advise, however, that in any event no such engineering studies could be made until the power allocations are firmed up.

That is the thing that concerned me when you tie it up with Assistant Secretary Aandahl's statement that the grid is essentially completed. Until that is clarified there will be a certain amount of uneasiness, Mr. Chairman, on the part of many power distributors.

From this it became evident to us that no real plan for providing the added transmission line and substation capacity does exist—the customers of the Bureau just move ahead one difficult step at a time.

SCHEDULING OF ADDITIONAL POWER SUPPLY

That has been a most vexing problem for many people over the past year and it is going to be an increasing problem unless we find a solution.

In our 1957 report to this committee, we noted a letter from Assistant Secretary Aandahl which discussed the future availability of power "perhaps in 1960, 1961, and 1962." At the present Sioux Falls meeting, the Department of Interior officials told of additional firm power to be made available after the second round power allocations are made, with such additional power deliveries contingent upon construction schedules not yet firmed up.

From an engineering standpoint and power supply standpoint, I feel that no one at Sioux Falls got any more comfort than they had previously.

Some of our clients in the Missouri Basin which are purchasing 100 percent of their power requirements from the Bureau have exceeded their contract demands in the past 2 months. Many others will exceed their contract demands before additional firm power is offered to them by the Bureau. On behalf of our clients, we have attempted to negotiate for the purchase of uncertain amounts of firm power for uncertain periods of time in order to bridge the gap in power supply. Now this is a most difficult situation, and we are not getting good results. This situation serves to point out the confusion that can be created when a major power supplier in an area, such as the Bureau, fails to accept a public utility responsibility or work out an orderly transition to another basic plan.

When consideration is given to the fact that some 200 or more preference customers in the Missouri Basin will be shopping around for supplemental firm power in the next few years if the present plans of the Bureau go forward, there will be some real problems presented for both the Bureau and its customers. Based on the delays that we have encountered over the past year and a half in our negotiations with the Bureau on just such supplemental power contracts, we are of the opinion that the Bureau just does not have sufficient technical and legal staff. Certainly they do not have the the staff that will be required by the power marketing policies that they now propose to undertake in connection with the second round power allocation. Under this situation the costs incurred by our clients and the delays encountered with the Bureau are, in our opinion, unwarranted.

INTERIM MEASURES

In an effort to bridge the gap in power supply between the present power allocations and the pending power allocations, we have been actively working on proposals whereby two of our clients will purchase blocks of "summer firm" power from the Bureau and "winter firm" power from the Nebraska Public Power system. The Nebraska system has developed a summer peak and having been successful in purchasing a substantial block of "summer firm" power from the Bureau, now have substantial quantities of steam generated "winter firm" power which they are willing to sell (about 100,000 kilowatts). This is typical of the arrangements that can normally be expected in a region having both hydro and thermal generated power available. We found that the Bureau was not prepared to effectively assist us in working out the necessary contractual arrangement in this situation, and much time has been required to reduce the proposals to a workable plan and secure allocations of "summer firm" power from the Bureau.

In the plan to get Nebraska "winter firm" power delivered to South Dakota, North Dakota, and eastern Montana, we found that the Bureau would not recognize the power displacement that would actually take place, but insisted on a 1 mill per kilowatt wheeling charge, plus 7 percent for losses, whereas in reality such losses would not occur. This overall policy of the Bureau needs reappraisal, and we recommend that some of the basic policies used by the Bonneville Power Administration for wheeling nonfederally generated power be considered by the Bureau in an attempt to greatly simplify the present arrangements.

I heard of a recommendation made this morning by Mr. Jensen suggesting that the Bureau give serious consideration to firming up their present power supply by the purchase of thermal power so that they could carry everybody through 1963. I think that is a commendable plan and I believe it should receive very serious consideration because these halfway measures are just taking too much time and are not working out satisfactorily.

PRODUCTION OF FIRM ENERGY DUE TO INCREASED USE OF WATER

In our 1957 report to this committee, we noted that the 1957 "Adequacy of Flow Report" of the Missouri Basin Interagency Committee pointed out that "water depletions can reduce energy production by as much as 25 percent in the next 40 years." This fact in itself points up the generally accepted concept that for the long pull, hydropower will be used primarily for peaking purposes, and the base power loads of the region carried with thermal generation. In the 2 years that have passed, we have not learned of any Bureau plans that would foster and facilitate the financing and construction by preference customers and others of the large modern and efficient thermal generating plants that will be needed to provide lowest cost power for the region.

USE OF FEDERAL TRANSMISSION GRID

In an effort to get planning underway for potential thermal generation by one of our clients, we suggested that they secure such a.c. network analyzer studies of the Bureau grid as had presently been made. We found that such studies are difficult to procure from the Bureau field offices, as copies had not been made for distribution.

The Bureau does not anticipate that these customers will be getting into this transmission business, so they did not make available such copies.

We then suggested that our clients and the Bureau of Reclamation engineers undertake joint transmission studies in order to determine locations on the Federal transmission grid where a thermal plant could be located to mutual advantage of the Bureau and the preference customers. In a meeting with Assistant Secretary Aandahl and his staff in Sioux Falls in December 1958, we learned that the Bureau preferred not to make such joint engineering studies as we had proposed, but reserved to themselves the right to determine what surplus capacity is or would be available in the transmission grid and for what period of time. This matter is discussed here primarily to show that the Bureau apparently does not now have a long-range plan to facilitate the use of the transmission grid by others, and thereby avoid the costly and uneconomic substitute of constructing duplicating transmission facilities.

It is unreasonable to expect that the preference customers will provide funds to study the economics of several possible thermal plant sites only to find that transmission capacity on the Bureau transmission grid is not, or cannot be made available for wheeling purposes. This matter merits a careful reappraisal, as we have knowledge that the problem of wheeling non-Federal power has been successfully worked out on several major projects in the Pacific Northwest.

In connection with our analysis of Bureau power contracts for our clients, we found that the longest period for which the Bureau will agree to wheel nonfederally generated power is 4 years. It is difficult to see how financing can be secured by preference customers for the construction of modern thermal generating plants costing in excess of $15 million if only 4-year wheeling agreements can be secured from the Bureau. If new legislation is required to enable the Bureau to enter into longer term wheeling agreements (for as much as 35 years) and construct such additional high voltage, high capacity transmission lines as may be needed to assure that such wheeling capacity will be available, prompt consideration should be given by this committee to suitable legislation that will facilitate such transactions.

In our 1957 report to this committee, we pointed out that the firming of Federal hydropower by thermal power in the Missouri Basin required a comprehensive study, and that such a study should be the responsibility of the Federal Government, with cooperation from preference customers and others as required. We are not aware that any such studies have been made or are now underway by the Federal Government, and again emphasize that such a study is past due. In our opinion, the required overall power planning is not something that can be done by the many diverse power interests in the Missouri

Basin. The Federal Government took the initial responsibility for power planning and for such time as they actively pursued planning endeavors, good results were achieved.

Since the 1957 Senate hearing, we do not see much evidence that comprehensive planning in the Missouri Basin has been continued. For a short period of time last year, consideration was given to the promotion of a giant power pool, with future power planning for the region delegated to that group. It soon proved that such pooling and planning arrangement would not win sufficient acceptance to permit the plan to be realized. In the meantime, much valuable time was lost, time which will be sorely missed in the future if a workable arrangement for basic power planning is not soon adopted. Because the Federal Government has, in fact, assumed a utility responsibility because of the dominant place its vast hydropower generating and transmission system occupies in the power supply picture in this region, it is logical that it provide leadership in power planning.

We thank you for the opportunity afforded to express these views.

The CHAIRMAN. Thank you very much for your statement.

The next witness will be Max Stanley, Muscatine, Iowa.

I regret to say that I am called into a conference on another committee, and I will have to leave. I will ask Senator Martin to take the chair and conduct the hearing for the balance of the day.

STATEMENT OF MAX STANLEY, STANLEY ENGINEERING CO., MUSCATINE, IOWA, IOWA COMMITTEE ON MISSOURI BASIN POWER

Mr. STANLEY. Mr. Chairman and members of the committee, I am C. M. Stanley, of Stanley Engineering Co., of Muscatine, Iowa. For over 25 years our firm has been concerned as consulting engineers with problems of power supply for municipalities, for cooperatives, and for industries. Our work on cooperatives has dealt both with the distribution-type cooperative, and with the so-called G. and T. or generation and transmission cooperative, who have had the utility type of responsibility for providing power for their various members, being distribution cooperatives. We have had experience with various cooperatives in the Missouri Basin area and recently represented 12 of the G. and T. type cooperatives in this area in joint studies in connection with the proposed Mississippi Basin pooling operation.

I represent the Iowa Committee for Missouri River Power, which is associating their activities with the Midwest Electric Consumers Group.

The members of this Iowa committee are 6 cooperatives located in the State of Iowa in the western part, plus 30 municipalities. All of these have their service areas in whole or in part within the U.S. Bureau of Reclamation marketing area. All of these have a common interest in obtaining more power from hydropower from the Missouri Basin.

Their situations differ considerably. Some of them are now purchasing Bureau power, some of them are not. Of the larger cooperatives in this group who have an aggregate membership through their distribution of roughly 100,000 consumers, one of them, the Northwest Iowa Power Cooperative, now is receiving its entire power supply from

the Bureau on the Missouri River project. The L. & O. Power Cooperative, a smaller group, is likewise obtaining their entire power supply. The other four, Corn Belt, Central Iowa Power Co., Southwestern Federated Power Cooperative, and the other, in spite of the fact that they made application in 1955 and were denied and currently are receiving no power from the Bureau and are proving their power requirements principally by generation, using their own facilities. All of these have received tentative allocations last December for some amounts of Bureau power.

I would like to direct my testimony basically to the problems which confront us as engineers in trying to help these cooperatives plan their power-supply problems. I would like to refer principally to a study that we made for five cooperatives, four of whom are included in the Iowa committee, and one, East River, in the southeast part of South Dakota, associated with the other four, Corn Belt, L. & O., Northwest Iowa, and Southwestern Federated, in an effort to take a look at the long-term problems that confronted them in power supply over the next 10 or 15 years.

An indication of the magnitude of that is given by a comparison of their present loads in 1958, in round numbers, aggregating 180,000 kilowatts, and their 1968 estimated loads of double that amount of around 360,000 kilowatts, and in 1973, an estimate of slightly over half a million kilowatt load for this group of 5 cooperatives.

Against this they have generating capacity now of 135,000, contracts with the Bureau of 116,000, and tentative allotments of an amount yet to be determined.

The study that was made for these five cooperatives developed, I think, three important fundamentals that I think are necessary in a sound, long-range power policy for them. The first was to obtain and use the maximum amount of basin power that they can. The reason for this is strictly an economic one. Many of the distribution co-ops of these members have power costs of 12 to 18 mills per kilowatt-hour. One of the reasons for that has been their inability to have any Bureau power, even though portions of their systems are within the marketing area. Secondly was the conclusion that they had to operate pooled or interconnected with adequate transmission facilities, with capacities that would permit the pooling of reserve capacities in generation, the exchange of blocks of power in cases of emergency or where it was in the interests of economy. The third conclusion was that they would have to continue as a group in the future to depend some on thermal power for the available power in the next decade or so from the Missouri Basin which certainly will be inadequate to meet all of the needs of all of the preference customers who will be clamoring for it. Indeed, that fact I think is recognized by the actions taken by the Bureau in their tentative allocations made last December in which they scaled down by applying an 85-percent factor to all of the requests that had been made.

As one attempts to help these cooperatives plan a power supply that involves the Bureau to some extent, there are about five difficulties which might be mentioned.

The first of these for those that are in Iowa is the absence of any Bureau lines in Iowa. There is no question but what that was a factor in the inability of certain of these cooperatives to obtain an

allocation back in 1954. Even with the tentative allocations that have now been made, there is still left unsolved the question of how that power is to be delivered to them. If it is not to be delivered over Bureau lines, and if the Bureau does not extend and construct lines into the western portion of Iowa, then the preference customers, even though they receive an allocation, will have costs that I am sure will be above those in other areas because any of the proposed wheeling arrangements yet made mean an added cost to them over what would be the case if Bureau delivered.

Another factor that enters into the planning that I would like to mention on the part of the Bureau of Reclamation, and with particular reference to the lines that are under discussion in Iowa, is the tendency to base them on too low a load, on too low a basis of allocated power, with the result that it is apt to lead to erroneous conclusions on voltage and on capacity.

A third difficulty is what I would call a somewhat unrealistic wheeling policy that the Bureau has adopted. The postage stamp basis, 1 mill per kilowatt-hour, regardless of the distance, does not bear any direct relationship with cost and can result in injustices or excess costs, or in some cases it can work the other way.

Another factor is the refusal to consider anything in the way of displacement. One of the suggestions that was developed in our study for these five cooperatives was a major thermal plant located on the Missouri River in western Iowa below Sioux City with a capacity of perhaps 300,000 and later even greater capacity than that, which would provide the deficiency of power for these five cooperatives. One of the problems we faced was how would we get that power into the East River Cooperative in South Dakota. Actually what would happen practically is what we engineers call displacement. The output of that plant would replace by displacement, power that Bureau is now transmitting into Iowa, and would back up the power that they were now transmitting to Iowa and let it be delivered into parts of Dakota. Yet the only basis that could be negotiated on that with respect to Bureau would be where a wheeling cost would have to be paid on that in spite of the fact that that type of arrangement in effect would reduce the total magnitude of the transmission responsibilities that Bureau has.

A fourth point that I would like to touch upon is the lack of relativism, I believe, in the policy on the availability and the use of the hydropower. It is a fact, I believe, from what I know of the situation, that in spite of the fact that there is some 1,500-000-plus kilowatts of installed capacity in these Missouri River plants, that the marketing is based on roughly two-thirds of that, or a figure somewhere in the range of a million kilowatts.

There are many reasons, no doubt, for that, and it is an area that I am sure requires a great deal of study. One of the problems, I think, is the conflict of interest over how that water is to be used, and how it is to be dispatched, and with the dispatching in the hands of one group and the sale of power in the hands of another. This leads to overconservatism in determination of availability of power, I think.

Another factor that enters into it is the refusal as yet, or the inability perhaps to work out arrangements where there can be adequate pooling

of thermal or hydro capacity. The contracts that are entered into by Bureau are all based on what we call a load-use or load-factor-use arrangement, where they attempt to supply the entire requirements of a certain block of power. In many cases the best way to use hydro capacity is to get more on the peak-loads, using the steampower or excess generating capacity or off-peak generation from the steamplants in a manner in which it will reduce the demands on the water in short season and permit the use of the available water to maintain a higher kilowatt of firm peaking capacity. The net result of that policy, I believe, is that the hydro projects on the Missouri River are being used now at less than their maximum benefit and maximum availability.

A fifth point that certainly is a factor to many preference customers, particularly if they are dependent entirely upon power from the Bureau for their supply, is the uncertainty of that supply. The failure of Bureau to accept a utility responsibility. The lack of any long-term planning. The inability to deal with situations that might permit the interconnection and use of preference customer owned thermal capacity that could achieve some of the gains of firming up a greater amount of this Missouri Basin power.

All five of these difficulties are areas that I think seriously affect the problems of cooperatives, of municipalities and other preference customers, as they attempt to plan power supplies in which Bureau is a factor. They are all areas that I believe permit the most careful consideration.

That concludes my testimony. Thank you.

Senator MARTIN (presiding). That is a very good statement. I have one question about this point that you made with reference to charging a wheeling charge where there is no transmission. That is one of your problems.

Mr. STANLEY. The displacement problem.

Senator MARTIN. Yes.

Mr. STANLEY. Yes.

Senator MARTIN. Do you have a suggested plan to meet that problem?

Mr. STANLEY. I think the only way to meet that is to develop a more realistic approach to wheeling, and recognize that if the situation is such that it is not making demand of additional transmission but as would be the situation I mentioned, would actually help to lessen Bureau's transmission responsibility, that there is something in the wheeling formula to allow a suitable adjustment for that kind of condition.

I can't offhand give that formula. It is a thing that would take considerable study. I realize that the present postage stamp approach has lots of precedent back of it. Nevertheless, I think it tends to restrict the chance to work out some of these arrangements that I believe will help lead to a more economical supply in the territory as a whole.

Senator MARTIN. Do you foresee that this overall study can bring forth a workable program?

Mr. STANLEY. I would hope that it could.

Senator MARTIN. We are not against an impossible situation, then?

Mr. STANLEY. I don't think so. I hope not.

Mr. STONG. Mr. Stanley, do I understand correctly from the testimony of one of the witnesses this morning, that Bonneville Power Administration recognizes displacement in its wheeling and transmission arrangements?

Mr. STANLEY. I can't answer that. I have had no experience in that part of the country.

Mr. STONG. Mr. Trommershausen, can you answer that question?

Mr. TROMMERSHAUSEN. The answer is "Yes"; especially with respect to losses. There is one example that I think will clarify the situation. They have surplus power in the eastern part of Washington. They sell that surplus to the city of Seattle and the Aluminum Co. of America. The company's plants are at Vancouver and Wenatchie. This power is used to serve Bonneville's customer in Spokane, and Bonneville power from the Bonneville Dam goes to the Aluminum Co. plant, and power from Chief Joseph goes to Seattle. There are no losses. So the wheeling charge that Bonneville has levied both to the city of Seattle and the Aluminum Co. of America take those matters into account. There is a formula that Bonneville has successfully worked out that recognizes the problem that Mr. Stanley just described.

Mr. STANLEY. Senator, I would say that there are many instances in power systems generally where displacement is commonly used and arrangements made to handle it. We have had several instances where we have worked out arrangements with that in mind when G. and T. type cooperatives and privately owned utilities would have interconnections.

Mr. STONG. In this instance we have one agency within the Interior Department accepting it and another in the same Department refusing to accept it.

Senator Moss. I have no questions.

Senator MARTIN. Thank you.

Mr. STANLEY. Thank you, sir.

Senator MARTIN. The next witness is Mr. Hull of Rock Rapids, Iowa.

STATEMENT OF EUGENE E. HULL, SUPERINTENDENT, MUNICIPAL UTILITIES, CITY OF ROCK RAPIDS, IOWA, SECRETARY, MIDWEST ELECTRIC CONSUMERS ASSOCIATION

Mr. HULL. My name is Eugene E. Hull. I am employed as superintendent of the municipal utilities of the city of Rock Rapids, Iowa. This testimony I am giving is not in conjunction with any other group that is represented here. I am merely presenting the viewpoint of the city of Rock Rapids, Iowa, and the problems it has.

Beginning in October 1948 the city utilities started negotiations with the Bureau of Reclamation for a contract on power to be developed on the Missouri River dams by the Bureau of Reclamation. This contract was finally signed in 1954 making Rock Rapids the first municipal utility in the State of Iowa to receive power from this Federal project. This contract was for 1,500 kilowatts of firm power and for a term of 20 years.

It was deemed imperative by the board of trustees of the Rock Rapids municipal utilities that we consummate this contract as, at that

date, the future studies of the needs of the community for electric power could not be provided by the presently installed generating equipment. These facilities consist of two steam boilers of 18,000 pounds per hour each, installed in 1937, one turbogenerator of 500 kilowats, one turbogenerator of 350 kilowatts installed in 1937 and one turbogenerator of 1,000 kilowatts installed in 1947.

This means that the firm capability of the plant is only 850 kilowatts, and that in 1963 we must depend on two boilers and two turbogenerators that will then be 26 years old and very inefficient and costly to operate compared with present-day equipment.

In 1957 the Department of Interior asked for applications of additional power in the eastern division of the Missouri River Basin project, the power to be available during the period 1961 through 1964.

When making application for this additional power, we were asked to determine our total power requirements for the December peaks of the years 1961, 1963, and 1965. This application was then made by the city utilities with the expectation that the existing contract would be respected and that we could look to the future with confidence that the department was considering our needs for the winter peaks of those years.

In December of 1958 the Assistant Secretary of the Department of the Interior, accompanied by other Department officials, came to Sioux Falls, S. Dak., to announce a suggested policy devised for allocating the power available for firm commitment, from the eastern Missouri Basin. The Secretary's first announcement that the Bureau would consider the allocation of 88 percent of the preference customers' 1963–64 winter peakloads, as adjusted by the Bureau of Reclamation, met with some disappointment, but the majority feeling was one of satisfaction by the estimated 500 utility people present.

The next morning a new policy was announced and feeling of consternation hit the assembled group of Bureau customers. The new policy, based on total applications and not on needs, seemed to many, after analysis, to be a repudiation by the Government department of the contracts in force since 1954. The application had been for additional power to meet the total needs then of 1961 through 1964.

The immediate thoughts that come to mind were: Is the U.S. Department of Interior going to recognize the contracts made in 1954 or are they to be scrapped? If so, are subsequent contracts to be again repudiated in case of further allocations within the basin? This could only lead to confusion and great expense to the preference customers in considering the future needs of the electrical consumers in the Missouri Basin area. Certainly no government should put itself in the position of defaulting on its contracts.

In the case of Rock Rapids this new formula, if used as announced, would provide for 85 percent of the total application for power in 1963, or 2,000 kilowatts. This means that the 85 percent will be applied not only to the additional 500 kilowatts asked for, but also the 1,500 kilowatts now under an existing contract. On this basis the city utilities would be allotted only 1,700 kilowatts. This would mean only 200 kilowatts additional, or 40 percent of the 500 applied for. This seeming repudiation of the validity of the 1954 contract, by applying the new percentage formula to it, can only bring expense and confusion to the Rock Rapids municipal utilities.

The use of this formula to total applications, rather than needs, brings about the following results in the six State Missouri River Basin.

In Montana, where only old customers of the Bureau with existing contracts have applied for power, these old customers will receive only approximately 36 percent of their requests for additional power.

The North Dakota old customers will receive approximately 62 percent of their additional requests, but the new applicants will receive 85 percent.

In South Dakota, similarly, the old customers will receive approximately 71 percent of the additional requests but the new customers 85 percent.

In Iowa, the old Bureau customers will receive approximately 47 percent of their additional requests, and the new customers 85 percent.

In Nebraska, the old customers will get approximately 54 percent additional, and the new applicants 85 percent.

In reviewing the above figures, it would seem that those preference power people who have worked with the Bureau and have helped bring about the fruition of this great project are now about to be deprived of a large percentage of the benefits accruing through using a formula based on applications rather than on needs. It is estimated that it will be necessary to expend $500,000 to build plant and generating facilities if allotments are not made by the Bureau to meet our requirements.

Senator MARTIN. Are there any questions?

Senator Moss. I was trying to clarify this application. These applications that you speak of are applications for additional power from the old customers?

Mr. HULL. The applications are for total power applied in 1963. That is the basis on which the Bureau finally settled, as I understand. They have not actually agreed on this 85 percent. It may come to 80 or 82.

Senator Moss. But the customers themselves, the municipalities have made the applications?

Mr. HULL. That is right.

Senator Moss. How then does that differ from their total needs? Wouldn't they apply for their total needs?

Mr. HULL. Most of them have, except in the case of municipalities that have their own generating facilities. Most of those with their own generating facilities have looked at this on the basis of the fact that they were not going to ask for their total needs. If they did, they would have received practically 85 percent. However, they took a realistic view, and they applied for what they thought they would need in 1963, using part of their own generation at that time. They also knew that that generation was getting older and older and by 1965 some of them, as in the case of myself, will have generating facilities that are so old that it will not be economically feasible to use them. We will have to build new ones.

Senator Moss. The new customers in their applications would be making application for total needs?

Mr. HULL. Yes.

Mr. STONG. As I understand, they are adding both what you applied for in 1954 allocation and the additional you have applied for in the new allocation?

Mr. HULL. They are adding the 1954 contract and adding to that the new applied for application, and then giving you 85 percent, or whatever percentage it will come out to of the total.

Mr. STONG. In your instance you applied only for what you need beyond your own generating capacity.

Mr. HULL. That is right.

Mr. STONG. Is that true in the case of all municipalities?

Mr. HULL. Not all; no. I think you will find it is true mostly in the case of ones that have steam plants with steam heating systems or some type of steam equipment that they must operate at all times.

Mr. STONG. As I understand, some of the municipalities applied only for what they need beyond their generating capacity.

Mr. HULL. That is right.

Mr. STONG. Some applied for their total need.

Mr. HULL. Most of the ones that have diesel plants have applied for their total requirements.

Mr. STONG. Do you know if the municipalities have been allowed to modify their applications?

Mr. HULL. The applications were frozen at a date several days before the hearing in Sioux Falls.

Senator MARTIN. Thank you.

Mr. HULL. Thank you, sir.

Senator MARTIN. The next witness is Mr. Oscar Bergman, Valley City, N. Dak.

STATEMENT OF OSCAR N. BERGMAN, JR., SUPERINTENDENT OF MUNICIPAL UTILITIES, VALLEY CITY, N. DAK., MEMBER, BOARD OF DIRECTORS, MIDWEST ELECTRIC CONSUMERS ASSOCIATION

Mr. BERGMAN. My name is Oscar N. Bergman, Jr. I am employed as superintendent of the municipal utilities located in Valley City, N. Dak. Further, I am a member of the board of directors of the Midwest Electric Consumers Association.

Valley City was the first, or one of the very first, public bodies to consummate a contract for Missouri Basin power. Under the 1954 Bureau of Reclamation contract which expires December 31, 1961, the city was allotted 2,500 kilowatts of firm power and 1,500 kilowatts of secondary power which is available during the navigation season.

We have in our powerplant one 1,500-kilowatt turbogenerator installed in 1929, one 2,500-kilowatt turbogenerator installed in 1939, and one 1,000-kilowatt turbogenerator rebuilt in 1945. When we are forced to remove our largest machine from service, our plant capability is 2,500 kilowatts and along with our 2,500-kilowatt firm power contract with the Bureau, gives us a total system capability of 5,000 kilowatts. In December of 1958 our system peak was 5,100 kilowatts, which indicates that, combining our firm power contract and capable plant capacity, our present machines are inadequate to handle our present needs.

When making application for additional Missouri River power which is to be available in 1961, 1963, and 1965 we were apparently

in error in assuming each applicant should take into consideration capable steam generation now located on his power system.

We applied for 3,800 kilowatts in 1961, 4,600 kilowatts in 1963, 5,500 kilowatts in 1965. Based on conservative estimates our annual peak demand will be 5,800 kilowatts in 1961, 6,600 kilowatts in 1963, and 7,500 kilowatts in 1965. If we had ignored our capable steam generation, which a number of the applicants apparently did, the Bureau automatically would have allotted us an additional 1,700 kilowatts.

On November 21, 1958, we received a Bureau study of possible disposition of basin power and were very pleased to note that their study was based on load requirements, less known efficient generation, not upon customers' application. During the Sioux Falls, S. Dak., meeting held December 9, 10, and 11, 1958, the Bureau decided to more or less ignore their study and make allocations on 85 percent of the customers' 1963 application. On this basis, Valley City's total allocation of river power will be only approximately 3,910 kilowatts.

With our assured nameplate rating in steam power of 2,500 kilowatts plus the proposed allocation of river power of 3,910 kilowatts, our power availability will be 6,410 kilowatts. Our projected annual peak demand in 1962 will reach 6,500 kilowatts, leaving us a shortage of at least 90 kilowatts at that time. I might add that is a very conservative figure.

Along with the problem of having only enough power available to last through the year year 1962, we are very disturbed as to when the additional river power might be available. How do we know if the 3,910 kilowatts proposed allocation of river power will be available to us by the year 1962? Are we to assume that this power will not be available until later, say, the year 1963, 1965, 1967, or when? Must we immediately proceed with raising moneys to install additional steam capacity?

We are now in the process of making a preliminary study of the cost of installing 7,500 kilowatts of additional steam capacity. Our present building will accommodate this size machine and boiler, but even with minor building changes the cost is tremendous. Our latest estimate for this size machine is $1½ million, or $200 per kilowatt. This high installation cost per kilowatt is only the beginning. The heat rate of this comparatively small machine is approximately 11,500 to 12,000 B.t.u. per kilowatt-hour, whereas the heat rate of some of the larger machines installed in the United States today is running as low as 9,350 B.t.u. per kilowatt-hour.

It might be of interest to this committee to know how much each kilowatt of basin power means financially to our community. Based on $200 machine cost per kilowatt, 4 percent interest and 3 percent depreciation over a 20-year period, each kilowatt installed in lieu of hydropower will cost our consumers $200. In addition to this $200 spent for interest and depreciation, our fuel cost is 1 mill per kilowatt-hour, above basin power energy costs. Using a 50 percent load factor, during the above-mentioned 20-year period, this extra mill cost means $87.60, making a total of $287.60 per kilowatt.

I did a little figuring and the 1,700 kilowatts that we lose, due to the fact that we considered our generation, will cost our community in a 20-year period $490,000.

There must be an easier solution to this problem, than forcing each individual customer of the Bureau of Reclamation to install small units at high installation cost, plus undesirable heat rates. One of the solutions may be to do something about the 600,000 kilowatts of hydromachine capacity, which the Bureau has not firmed. I have often wondered what would happen to a private individual if he invested money in 1,600,000 kilowatts of generating capacity and yet only considered 1 million kilowatts of this capacity on a so-called firm basis.

According to the latest survey conducted by the U.S. Bureau of Mines, North Dakota has 300 billion tons of lignite coal which is readily accessible. With this abundant supply of low cost fuel it would seem only natural that the Federal Government would install thermoplants, to back up the present hydro program. The present hydro system and transmission grid, backed up by thermoplants, burning low-cost fuel, should certainly return more revenue per dollar investment than is now being realized.

Until Goverment thermoplants could be constructed, I feel that one of the most logical solutions to this problem would be for the Bureau of Reclamation to firm up machine capacity which is to be available in 1965, by purchasing excess steam capacity from the plants now located in the Missouri Basin. It certainly should be much easier for the Bureau to make arrangements for purchasing this steam generation and wheeling it to their customers, rather than have each customer negotiate for his own needs. In the Bureau's many engineering studies made of their consumers' needs and also knowing what the fuel costs are for each steamplant now located in the basin, it would seem to me that they could very easily negotiate for steampower to back up the hydropower for some years to come.

The eastern division of the Missouri River Basin project consists of six States. The six States are Montana, North Dakota, South Dakota, Minnesota, Iowa, and Nebraska. I understand that five of these States all have very similar problems; that is, peaking during the winter months, whereas the sixth State, Nebraska, has a problem of peaking during the summer months. If Nebraska peaks during the summer months, they apparently have surplus generating capacity during the winter months; therefore, why is it not possible for the Bureau of Reclamation to purchase their surplus capacity and deliver whatever energy is available to the other five States during the winter period?

Under the present methods of allocation and the inability of the Bureau of Reclamation to give the consumer any idea when the power might be available, it appears to us that instead of the "reasonable hydropower" helping the consumer, it has created many additional problems.

I greatly appreciate the opportunity to make this statement before this committee. Perhaps our problem is minor, in comparison to those of the entire basin. However, to our community it is of great concern.

Senator MARTIN. Are there any questions?

Senator MOSS. I have no questions.

Senator MARTIN. Thank you very much.

Mr. BERGMAN. Thank you, sir.

Senator MARTIN. The next witness is Mayor E. C. Myrland, of Onawa, Iowa.

STATEMENT OF E. C. MYRLAND, MAYOR, CITY OF ONAWA, IOWA, REPRESENTING NORTHWEST IOWA MUNICIPAL POWER GROUP

Mr. MYRLAND. Mr. Chairman and members of the committee, before I proceed with the statement, I would like the record to show that Mr. Ray Adkins, our utility superintendent, is with me and should there be any technical questions, he is in a position to answer them.

Senator MARTIN. You may proceed.

Mr. MYRLAND. My name is E. C. Myrland. I am mayor of the city of Onawa, Iowa. I represent 29 municipally owned electric utilities in the western part of the State of Iowa, all of whom are in the Missouri River basin marketing area, and whose members have formed a group known as the Northwest Iowa Municipal Power Group. All of the towns and cities I represent would be known as small communities, but they represent a total population of approximately 60,000 people.

The Iowa municipal communities which I represent all have and own their own electrical generating plants as well as their transmission and distribution systems, and have a total installed capacity of 68,000 kilowatts. The main reason that plants of this nature were started is, of course, a commonly known truth, that small communities were forced to build their own electrical distribution systems and generating plants in order to avail the people of adequate and dependable electric service.

The history of almost every one of these plants, and for that matter in most all municipal plants in the State of Iowa, has been one of good dependable service at a reasonable cost, and in most cases they have contributed much to the financial health of their community in the form of free services and the financing and construction of public improvements and recreational facilities. Although these municipalities have had the courage and initiative to serve themselves and create a yardstick for dependable low-cost electric service in their area, they realize that their day of complete independence is over and their job is just beginning in the serving of their communities in the great power age we are now entering.

However, fast-growing peak loads in the past decade have multiplied so rapidly that the cost of expensive generating capacity for small-volume powerplants is rapidly approaching the point where feasibility of these small plants, for other than peaking and emergency purposes, become rather doubtful. Doubtful not only from the standpoint of high-cost generating equipment but also doubtful from the standpoint of high-cost petroleum fuels of which the known reserves are definitely limited. Recent bids taken on diesel generating equipment in our area show an average cost of $150 per kilowatt installed capacity, as compared to an average cost of $60 per kilovolt-ampere for substation capacity which has been installed by the Iowa municipalities now receiving power from the Bureau of Reclamation. From the above figures, along with the high fuel cost, it is apparent that the answer to our problem is interconnection, and the time has already arrived when we must either tie or die.

The time may come when investor-owned electric utilities have the capacity and facilities to serve our needs at a reasonable cost, but they do not exist in our area at this time. With the increasing use of elec-

tricity by industry and for improved living in the home, it will take the combined efforts of every one in the power game, regardless of ownership, to meet this challenge. Wholesale power purchases in this area are in the same bracket as high cost generation, and electric retail rates from other sources in the area are a matter of great concern.

In 1954 13 members of our present group obtained contracts with the United States of America for Missouri River Basin power for approximately 50 percent of their 1958 estimated load. This was much less, of course, than had been hoped for, but nevertheless it did postpone the need for expensive generating capacity as well as to make it possible to bring down the cost of electricity at the bus bar. Eleven Iowa communities have taken advantage of this tremendous relief, two being unable to do so for lack of wheeling facilities. The balance of the communities in the Iowa marketing area are now looking forward to such type relief and as preference customers, have applied for this service.

In 1957 the Bureau of Reclamation sent application blanks to preference customers in the Missouri River Basin asking for their estimated requirement for the years 1961, 1963, and 1965. The additional power, we understand, would be coming primarily from additional hydrogenerating facilities in the basin. We were all asked to make our estimates as accurately as possible from our past operating records and it was believed that all would get their 1961, 1963, and 1965 needs.

However, according to the estimated power available, the preference customers will only receive approximately 85 percent of their 1963 load requirements which is a tentative allocation of 38,000 kilowatts for the Iowa municipalities.

A recent survey taken by the municipal preference customers in the Iowa marketing area shows a 1958 total peakload of 37,500 kilowatts, which almost equals the amount to be allocated to them by 1963. The survey also showed their estimated combined loads for 1965 to be 53,700 kilowatts, and 77,600 kilowatts for 1970.

We understand that 600,000 kilowatts of installed machine capacity in the basin cannot be sold as firm power for lack of energy. In our judgment this 600,000 kilowatts of machine capacity can be firmed through either the conservation of water, additional hydro facilities, thermogeneration, or a combination of all three.

We realize that power from the Missouri River program cannot supply all of our power needs of the future but, in our opinion, the drastic cut in the firm power applied for, as compared with the installed machine capacity in the basin, has drastically diminished the feasibility of the power project to both the preference customers and the Government.

We are not forgetful of our good fortune of being preference power customers within the marketing area of the multiple purpose projects in the Missouri Basin, nor do we wish to be unfair or unjust in our requests that the total amount of machine capacity be firmed up thus giving the municipal preference customers approximately their full 1965 requirements. This will eliminate the necessity of supplementing our U.S. power contracts with additional small inefficient generating units or trying to bargain at a great disadvantage with other suppliers for our additional needs of the immediate future. If this

additional firm power is made available most municipal plants can meet their future peaks on their present equipment and give their communities low-cost electrical service for many years.

We therefore respectfully urge the members of the committee to take whatever action they deem necessary so that more firm power can be made available to the preference customers by proper management and complete development of the power potential in the Missouri River Basin.

I would like to leave the statement for a minute, if I may, and bring something else in the picture. In Onawa, we have had an electric municipal plant since 1893, and we braved all the bad deals from 1893 until now, and the good ones. We were operating with steam generation until 1937. In 1937 we installed a diesel generating plant that was the pride of the country and was a showplace for not only other towns in Iowa but for other States who came to look. We thought we were set forever as far as economical, efficient generation of energy was concerned for a small community like Onawa. Now, in 1957, due to the high cost of oil and the high cost of machinery, that perfect plant in 1937 is just as obsolete as a steamplant was when we changed to diesel, proving the tremendous change in power production.

The question was asked this morning—maybe you are interested in our answer—how much real benefit accrues to the population of a community receiving power from the Missouri River hydroplants. In Onawa, our saving in fuel cost compared to what we pay the power company amounts to $37,500 a year. We are a community of 3,500 people, so it is over $10 per capita in saving in the cost of generating electricity in this small community. That saving has been passed on to the customers. We have, we think, the lowest rate in the State of Iowa, and we will always continue to drop our rates when we do save on our production.

From 1937 to 1957 we served all of the REA in our county at a price so that they could sell and make their retirements on their indebtedness and we made money, too. So I believe we are one community that can qualify under the statement that when we do produce electric energy cheaply, we can pass the saving on to the consumers in the area and everybody gets the benefit of it.

Gentlemen, I appreciate the opportunity to talk to you, and I thank you.

Senator MARTIN. Thank you very much.

The next witness will be Mr. Helge Hygren of Flasher, N. Dak. I understand he will be here later.

We will pass on to the next witness, Mr. Alfred L. Chantry of West Point, Nebr.

STATEMENT OF ALFRED L. CHANTRY, WESTPOINT, NEBR., CUMING COUNTY RURAL PUBLIC POWER DISTRICT

Mr. CHANTRY. Mr. Chairman, members, my name is Alfred L. Chantry, Cuming County Public Power District, Nebraska Electric Generating & Transmission Cooperative, member, board of managers of Nebraska Public Power System, director of Midwest Electric Consumers Association.

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My testimony here today is representative of our rural electric projects in Nebraska.

We represent 23 rural electric projects in the eastern two-thirds of Nebraska, outside of the Omaha Public Power District. Due to irrigation and other seasonal requirements we have very high summer power demands. We have studies showing that our summer power requirements will exceed our winter requirements in 1965 by approximately 250,000 kilowatts.

For this reason alone we must support the contention that the basin projects were built for multipurposes.

Nebraska has an excess of thermal power during the winter months that can be expressed as many thousands of kilowatts for the next several years, which Nebraska would like to sell to others. There must be a way that could be found that this surplus winter power could be used to good advantage and to the benefit of all basin preference customers. We recommend a study be made to integrate the Missouri Basin hydroelectric system with the existing thermal capacity in the area.

We rural electric people in Nebraska appreciate very much the commitment to us by the Department of the Interior and the Bureau of Reclamation of 100,000 kilowatts of seasonal firm power. This power contract enabled us to go to our banker and borrow the funds needed to build a line from the vicinity of the basin plants to one of our load centers in Nebraska.

We are of the opinion that continuing studies will and should be made on the best usage of the basin projects. We believe that experience in the operation of the dams and powerplants will produce more power, both year round firm and seasonal firm. We rural electric people with high investment costs serving the sparsely populated areas of our State need all of the low-cost basin power that we can get.

We are hopeful that more of this power will be made available to all electric users in the basin area. And when it is made available, we people of Nebraska only want our fair share.

I would like to add as a matter of clarification that the Nebraska Public Power System acts as our agent in contracting for Bureau of Reclamation power as well as being our wholesale power supplier. Approximately 30 percent of our total requirements come from the Missouri Basin hydro system, and the balance from the Nebraska Public Power System's hydro and thermal plants. The Nebraska Public Power System has no direct allocation of Bureau power for its own use. The system is the wheeling or carrier agent for all of the preference customers in the area in which it operates, and it has no nonpreference customers.

I will be happy to discuss any other Nebraska public power program.

Senator Moss. What is the reason that Nebraska would have peak demands in the summer whereas the other States have told us their peak demands are in the winter?

Mr. CHANTRY. We have a very large irrigation season in Nebraska. Our Platte Valley in Nebraska, practically clear across the State and adjacent to the Platte Valley, has high underground water content. We pump that water with electric power on to the land, which has made a wonderful growth in the economy of Nebraska, as well as a lot of ditch irrigation projects.

Senator Moss. That is the primary factor for pumping irrigation water in the summer?

Mr. CHANTRY. That is one of the primary factors. You also know that our State is a terrifically cold State in the middle of winter but a terrifically hot State in the summer. We are also developing a very high airconditioning system. We have large alfalfa mills, grain processing seasonal plants that operate mostly in the growing season of the year, which also add to that terrific summertime demand of ours.

Mr. STONG. Mr. Chantry, some of the witnesses this morning testified that the Bureau of Reclamation has a considerable amount of extra seasonal power in the summer, and you testify now that Nebraska has a winter thermal capacity, and you think the two should be brought together to create additional firm supply for the valley. Has the Bureau of Reclamation ever negotiated with you for winter capacity to firm up hydro?

Mr. CHANTRY. I am quite sure that the Bureau of Reclamation has never negotiated with us in Nebraska for that firming up. Some of the power cooperatives in the Dakotas and possibly Iowa have negotiated with our executive manager of the Nebraska Public Power System for some of our winter power.

Mr. STONG. But it is your feeling there is an excellent opportunity here to tie Nebraska and the Bureau power together and increase the firm power available in the basin?

Mr. CHANTRY. I might like to qualify that suggestion of mine here to this extent. I heard it proposed in a meeting with Secretary Aandahl yesterday here in Washington that that kind of a study should be made. It seems the Secretary feels, offhand, without studying the thing well, knowing exactly how it could be worked out, that the only way he could buy our excess capacity in the wintertime would be to take away from us our allocation of summer firm power in the summer season that we need so badly. I don't mean by my suggestion here to harm anyone in this process, but I really believe that there is some way that our surplus capacity in the winter months in Nebraska could be used to the advantage of all the preference customers to the north of us who have high winter peaks.

Senator MARTIN. Thank you very much.

Mr. CHANTRY. Thank you, sir.

Senator MARTIN. Mr. Lloyd Neil, Lexington, Nebr.

STATEMENT OF LLOYD NEIL, LEXINGTON, NEBR., PRESIDENT, DAWSON COUNTY PUBLIC UTILITIES DISTRICT

Mr. NEIL. I did not think I was going to be called on. I don't have a prepared statement, but I would make just a few remarks, if I may.

Senator MARTIN. You are very welcome.

Mr. NEIL. I am Lloyd Neil from the Platte River Valley in Nebraska. I don't think I should go home without mentioning our navigation. There has been considerable discussion of the navigation not being too necessary. We produce a large amount of dehydrated pellets in our valley and they are being shipped on the river to a very large extent, partly because of the adaptability of a barge to hold the material in an inert gas. When we talk about slack navigation I become concerned for our particular locality.

Senator MARTIN. What route do you use?

Mr. NEIL. A great deal of this dehi is used in the South for chickens. They go down the river and then up the Ohio, and clear down the Mississippi.

Senator MARTIN. Where do you put it on the river?

Mr. NEIL. Platte's mouth, I think now. I had no prepared statement. I did not think you were going to call on me.

Senator MARTIN. I appreciate your coming.

Senator MOSS. How far is the Platte River navigable?

Mr. NEIL. It is not at all. They store them in an elevator on the Missouri River.

Senator MOSS. It is just on the Missouri River that this river traffic moves.

Mr. NEIL. That is right.

Senator MOSS. These barges that they pull them in, how much draft do they have?

Mr. NEIL. I don't know for sure about that, but I know that the freight rate to Mississippi on a barge is 5½, and on the railroad it is 21, and that makes a lot of difference to us people who produce hay.

Senator MOSS. That is quite a difference, all right.

Senator MARTIN. Thank you very much. Is Mr. Hygren of North Dakota here? I understand he will not be here until tomorrow.

Is there anyone here who needs to come before the committee today because of your plans for tomorrow? Is there any witness desiring to come up before the committee at this time?

If not, I believe that completes the hearing for today, and we will adjourn until 10 o'clock tomorrow morning.

Thank you, one and all.

(Thereupon at 3:25 p.m., a recess was taken until Saturday, February 14, 1959, at 10 a.m.)

FEDERAL POWER MARKETING PROBLEMS

SATURDAY, FEBRUARY 14, 1959

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in room 3110, New Senate Office Building, Senator James E. Murray (chairman) presiding.

Present: Senators Murray, Church, and Moss.

Also present: Senator Hruska and Benton J. Stong, professional staff member.

The CHAIRMAN. The hearing will come to order, please.

The first witness this morning will be George Cornog, Linton, N. Dak.

STATEMENT OF GEORGE W. CORNOG, MANAGER, KEM ELECTRIC COOPERATIVE, LINTON, N. DAK.

Mr. CORNOG. Mr. Chairman, my name is George W. Cornog and I am from Linton, N. Dak. I am manager of the KEM Electric Cooperative which is a distribution cooperative serving approximately 2,850 consumers in south-central North Dakota. I am also a director of the Midwest Electric Consumers Association.

Our cooperative is a member of the Dakotas Electric Cooperative, which is a generation and transmission cooperative made up of 14 distribution cooperatives in North and South Dakota. This organization does not operate any facilities, but has borrowed money from REA to build generation and transmission facilities which are operated by the Montana-Dakota Utilities Co., who eventually will own the facilities under the terms of the contract between Montana-Dakota Utilities Co. and Dakotas Electric Cooperative.

The major power supply for our 14 systems is the Bureau of Reclamation and this power is wheeled over Montana-Dakota Utilities lines to our individual substations. Our 14 members all have allocations of power from, and contracts with, the Bureau of Reclamation. However, 6 of the 14 have had to purchase power from the power company this winter as our Bureau of Reclamation allocation was not sufficient to meet our needs. Our system was one of these six, as our Bureau allocation fell approximately 1,000 kilowatts short of meeting our needs. Since leaving North Dakota on this trip, I have received word from my office that the price on power purchased from Montana-Dakota Utilities has been increased 8½ percent, retroactive to the December 1958 billing. This is legal and according to the contract. However, I had been personally assured by Mr. C. W. Smith, president

of Montana-Dakota Utilities, that there would be no increase in costs this winter.

According to estimates from the 14 Dakota Electric members, all but one or two will exceed their Bureau of Reclamation contract demands next winter and must purchase the additional power they will need from Montana-Dakota Utilities at an increased cost. There is only 8,500 kilowatts available to these 14 systems under our contract with Montana-Dakota Utilities, even at the increased cost of 8½ percent which, according to a letter from the company's president, might even go higher. After this 8,500 kilowatts is used, there is no power available to these systems under present plans until additional Bureau of Reclamation power becomes available.

At Sioux Falls, S. Dak., in December 1958, Assistant Secretary of the Interior Aandahl told us the Department could meet 80-some percent of the 1963 requirements of the preference customers in the Missouri Basin marketing area. I do not believe there is any excuse for them not being able to meet 100 percent of our needs.

Since the Sioux Falls meeting in December, the Billings office of the Bureau of Reclamation has reduced our cooperative's application for power by approximately 17½ percent. They have attempted to justify this by distorting the figures used for estimates of future requirements and arguing that our farmers are not going to continue to increase their consumption of electricity as rapidly in the future as they have done in the past.

I may be jeopardizing my cooperative's position by testifying here before you gentlemen, as Mr. Aandahl is restudying our particular case, but my board of directors feel so strongly that something must be done with the present situation that they have authorized me to appear and take a chance on the results of my appearance.

I have talked to you today about just one small area of the Missouri Basin. However, the very existence of the REA cooperatives in this area is dependent on a supply of low-cost wholesale power in quantities sufficient to supply all their needs.

I believe there are three things the Congress of the United States must do in the Missouri Basin:

1. The Congress must see to it that the Army Engineers make the most efficient use possible of the waters flowing down the Missouri River, so that the maximum amount of power can be guaranteed. This is only sound economics when you consider the fact that power revenues are used to help pay for the dams on the river.

2. I believe the Federal Government should build steam generating plants to firm up the power generated at the dams on the Missouri River, so that the maximum financial return from the sale of power can be assured to the Federal Government.

3. I believe an investigation should be launched immediately into the distribution and sale of power by the Department of the Interior, as I do not believe the preference customers in the Missouri Basin are at all times receiving the considerations to which they are entitled under the laws passed by the Congress of the United States.

The CHAIRMAN. Are there any questions?

Mr. STONG. Yes, Mr. Chairman.

Mr. Cornog, you say that your organization operates a generating and transmission facility, or you built one which is operated by Montana-Dakota Utilities Co. and will eventually be owned by them.

Mr. CORNOG. Yes.

Mr. STONG. Did your group apply for a generating and transmission line to build your own facility?

Mr. CORNOG. Some years ago an application was made to the REA for funds to build a generating plant in connection with MDU. We had no generation facilities or transmission facilities of our own, and to wheel the Bureau power and to tie in with them wheeling Bureau power to us and getting this powerplant and everything, money was borrowed by the 14 cooperatives. MDU, the power company who operates these facilities under the terms of their contract, will own them and pick up the balance of the money owed to the Federal Government in a matter of 17 years or something like that from the beginning of this contract.

Mr. STONG. They were a part of this application?

Mr. CORNOG. Yes. This 85 kilowatts that we referred to is a plant financed by this method at Beulah, N. Dak., and through a later agreement borrowing money by these same cooperatives to build a substation at Glenham, S. Dak., we received the assurance of this 8,500 kilowatts of capacity in the Beulah plant to supplement our own needs.

Mr. STONG. How does the rate for the purchase of power at the company compare?

Mr. CORNOG. The contract calls for it to be sold at the Bureau rate with an escalation for labor and coal costs. However, Mr. Smith assured me in November that would not apply this winter. However, since I left the office we received our January billing, and they charged the Bureau rate plus 8.5 percent, and also made it retroactive to the December billing. Not being home, I have not had an opportunity to go into the matter with him yet.

The CHAIRMAN. Does that conclude your statement?

Mr. CORNOG. Yes.

The CHAIRMAN. Thank you for your statement and the recommendations that you make. I think the matter will be given very serious consideration.

Mr. CORNOG. Thank you, Senator.

The CHAIRMAN. The next witness will be Ed Schlender, Snake River Power Association.

STATEMENT OF ED SCHLENDER, SECRETARY, SNAKE RIVER POWER ASSOCIATION

Mr. SCHLENDER. Thank you.

The CHAIRMAN. I am going to ask Senator Church to take over the Chair. The witnesses are largely from his area, and I think it would be appropriate for him to act as chairman.

Senator CHURCH (presiding). Thank you, Mr. Chairman. I appreciate that opportunity.

I want to take this opportunity to welcome Mr. Schlender before the committee. Last year we had a very profitable hearing at which Mr. Schlender appeared, along with a number of other representatives of co-ops in central and southern Idaho. The purpose of that hearing was to determine the nature of the problem faced by those co-ops in procuring additional power to meet their growing requirements. The hearing was very helpful, I think, and may be productive in securing additional power for the co-ops in southern Idaho.

At the present time an effort is being made to integrate the Government systems in southern Idaho under the jurisdiction of the Bureau of Reclamation with the Government's system in Oregon under the jurisdiction of the Bonneville Power Authority. If that integration is successful, it will mean the realization of 13,000 kilowatts of additional power without the investment of an additional cent in dams or power generator facilities, this to be achieved merely through the integration of the two systems.

That effort is now being made through negotiations between the Bureau of Reclamation and the Idaho Power Co.

I say that by way of introduction, Mr. Chairman, and I would like now to call upon Mr. Ed Schlender to give his testimony this morning. Then if there are any questions following by members of the committee, I am sure he would be pleased to answer them.

Welcome to the committee, Mr. Schlender.

Mr. SCHLENDER. Thank you, Mr. Chairman.

I represent here this morning the Snake River Power Association, which is an association formed along the lines of the G. and T. by the cooperatives, the municipals, and the mutuals in southern Idaho, for the purpose of obtaining an adequate and low-cost power supply.

First of all, I would like to express the appreciation of all of the consumer members that we represent in Idaho, Wyoming, Utah, and Nevada. I am sure they are very grateful to this committee's efforts to help us solve our problem, and it has resulted in some progress.

I would like to think of this as a sort of continuation of the May 15 hearings on these problems before you, and by doing that I would not need to go into all of the details of the problem as we did before. Do you think it would be proper, Mr. Chairman, that we could refer to that as a matter of record; who the Snake River Power Association represents, and what the details of the problem are?

Senator CHURCH. Yes, Mr. Schlender, I think we can incorporate the record of those hearings and make it a part of the hearings this morning, and regard your testimony this morning as supplemental to that testimony, and as updating that testimony.

I have some correspondence that I would like to place in the record which follows up on the hearings of last May. I think that would be a very proper place to proceed.

Mr. SCHLENDER. Thank you. Just to briefly sum up for those that may be wondering what we are talking about, in those hearings our main contention had two main items. We contended that the Bureau of Reclamation had more power at that time in their own system in southern Idaho than they were willing to admit or that they were willing to contract with our various members for the sale thereof.

The second point was that due to the fact that Idaho Power had built the dam and were required by their Federal power license to integrate that dam with the Northwest Power Pool, we knew that there were great benefits to be derived by integrating the Bureau's system with the Bonneville system, because the peaks of dump power on the two systems do not coincide in the same period of the year or the season. We requested that such integration be accomplished, and it was proven in the hearing that large blocks of power would be made available to us if that could be done.

Following this up, after we came back home from Washington, we had a meeting with the Bureau of Reclamation on August 6 in Boise.

The Bureau announced that they had found that they had a block of high-grade secondary energy which they might find they could contract to the Raft River Electric Co-op, chiefly for pumping purposes. They agreed that they could do this providing that in a low water year we would seek some other place to buy power to make up for it if they could not furnish it. We agreed to that ourselves.

Another member of our system at that time was in serious trouble, the village of Hayburn. A large potato-processing plant was being moved into that city which would require about a thousand kilowatts more than the city's contract rate of delivery with the Bureau. The Idaho Power Co. through J. C. Simpott Co. was trying to force the city to let them serve that load because they said that they did not have the power to serve the factory since their contract with the Bureau was under that amount. We took the matter up with the Bureau, and they told us that they had the power, they thought, to be able to serve Hayburn with the amount they would need. However, they could not give them a contract for it. They would just let them run over their contract. They said that they could not increase their rate of delivery in their contract because all of the other users would then require an increase, and they did not have that much power.

At that time Mr. Nelson told us—I would like to correct that, Mr. Harold Nelson, director of region 1 of the Bureau—that he had been promised by Idaho Power Co. that he would be able to get 13,000 kilowatts of firm power from them whether they integrated with the Bonneville Administration or not. However, as far as the integration of the Bureau's system with the Bonneville power system at that time was concerned, Mr. Nelson told us that they had done all that they could and they could not do any more, and from there on it was up to the power company. As far as he knew the power company had made no progress toward that.

Senator CHURCH. What was the date of that conversation, Mr. Schlender?

Mr. SCHLENDER. That was August 6, 1958.

Upon return I summed up what the Bureau had told us, and at that time I sent a letter to you, Mr. Chairman. I would like to have permission to read that letter.

Senator CHURCH. You may.

Mr. SCHLENDER. This is on September 16, 1958:

Hon. FRANK CHURCH,
U.S. Senate, Washington, D.C.

DEAR SENATOR: I am sending you enclosed a copy of a memorandum of a meeting on August 6 with the U.S. Bureau of Reclamation. Also our reply to the memo which points out some corrections we feel are necessary.

We were told by Mr. Nelson that he had been promised by Idaho Power Co. that the Bureau would get their 13,000 kilowatts of firm power as a result of the company integrating their system with the Northwest Power Pool, whether they effectuate an integration with Bonneville Power Administration or not. By this you can see that they are willing to give up this power from their own system, of course, at a price we do not know, in order to keep the door closed to full integration of the Government's two systems. If they are successful in this, it will then mean that we will get 13,000 firm only and not the 24,000 kilowatts of summer pumping power that was shown would be available according to the BPA and the USBR figures. It also means that as the U.S. Bureau of Reclamation system grows, it would prevent the greater full scale benefits to be derived from accruing to the Government systems.

Idaho Power indicates that they are not going to negotiate with Bonneville Power Administration at all for a coordination of their Snake River plants.

Think of the loss to the Bonneville Power Administration and to themselves if they operate independent of the downstream plants.

It was my understanding at the May 14 hearings that we must coordinate this operation with the BPA in order to comply with the Federal power license. Brownlee is now in operation and as far as I know no coordination agreement is being sought. It seems to me this leaves them wide open, and I do not see how we can allow the Idaho Power Co. to prevent the benefits from accruing to the government owned systems that are only reasonable and fair while at the same time refusing to comply with the provisions of their license.

Very truly yours,

ED SCHLENDER,
Secretary of the Snake River Power Association.

On September 25, the Raft River Electric Cooperative, through the Snake River Association, requested that the Bureau increase their rate of power delivery because the Raft River Electric was in a very serious position. They have reached the point where their transmission lines can not pack any more load. You would have to plan ahead for these things. You just can't up and build a transmission line in a week or two after you decide you have the money, and you need to do it. So we had applied to REA for a loan to build this transmission line, and we would have to know by spring of 1959 whether we could take on more pumping load or not. It would depend on whether we had the money to build this transmission line.

REA was reluctant to go ahead with the loan unless they knew we had a power source. At that time we did not. We asked the Bureau to give us some kind of confirmation that we had a power source. We heard nothing from that request whatsoever, and just prior to coming back here, the president of the board of the Raft River Electric made a trip to Boise and met with Mr. Nelson of the Bureau to definitely find out, because by this time you can appreciate the position of the cooperative had grown even more serious.

We are about ready to go into this spring pumping season, and we don't know whether we can tell our members that we can carry new pumps for them or not this spring. If we don't get this loan so that we can start building a transmission line at least by the middle of this summer, we would be in a very untenable position. That includes considerable loads down in your State, Senator Moss. We have denied those people up to this time any pumping loads, because we just didn't have the power. It is a very serious problem.

Mr. Nelson told us at that time that he believed they would complete some wheeling arrangements with the Idaho Power Co. within the next week. That would be this present week. But they had a rough time with Idaho Power because Idaho Power did not want to recognize displacement values in wheeling between the Bureau's plants but wanted wheeling all the way through, which would make the cost too great. However, he believed that they were arriving at an agreement whereby they would recognize displacement, and that the Bureau may not have to raise their rates. He thought that maybe we could meet with them in March and we might at that time be able to allocate some of this additional power that he would get.

So as you can see, we have had a lot of promises, and we think we have made some progress, but as yet we do not have anything in black and white on this power, and the situation grows more critical because our contracts actually expire in March. We will be without a contract entirely at that time if they have not reached some point of agreement.

I think back in our previous hearing on May 15, we agreed with the committee that in order to protect our interests in this area that future contracts that are made between the Bureau and the Idaho Power Co. should be reviewed by this committee, because in the past there have been a number of contracts over the years that have been made that tied the Bureau down into a position that was detrimental to the interests of the public there as well as to the interests of the Bureau itself. We would like to point out at this time that if the Bureau is completing a wheeling contract with the Idaho Power Co., that before this becomes one of those contracts that goes into the record, and they tell us from here on it cannot be touched and cannot be broken, we think it should be reviewed by this committee to see that the public interest has been protected. We are fearful that perhaps by such a contract there may be limitations that will prevent us from getting power wheeled in from the Burns Creek project, if we are successful in getting that built.

We feel that since the Bureau is now integrating their own plants through new wheeling arrangements with Idaho Power that they have found 13,000 kilowatts of power available which they claimed they did not have before, that this proves we were right when we were here on May 15, and said we thought they had more in their system than they were willing to contract for. As far as we can find out, that is where this 13,000 is coming from, integration within the Bureau's own system, but not integration between the Bureau and Bonneville Power Administration.

There are still great benefits to be derived by continuing to strive for the integration of the Bureau and the BPA system, much greater than we can hope to derive out of just integrating the Bureau's plants on the Snake River.

To sum up, I would like to say that it seems to me from listening to the testimony here yesterday that our problems are quite similar to most of the problems in the Missouri Basin area. Their great problem over there was that the Government system had large amounts of power which was not firm. Therefore, they could not buy it, and it was being sold to the power companies as dump. This problem is not unique in the Missouri Basin. It is the same thing in Idaho. That is our big problem. Huge blocks of dump power in the spring when the waters are spilling and no sale for it as firm power because we have no firming in Idaho. We haven't a steamplant in Idaho to firm with at all. It is the same thing over in the Columbia Basin system, huge blocks of dump at certain times of the year, and no firming power. It is not unique. Therefore, wherever you have a system that is all hydro, you are going to have very much dump power to get rid of at low prices.

We feel that something should be done about this problem. The answer, of course, as most agreed here yesterday, is that there should be some kind of internal combustion plants built to firm this power. The power companies cry that the Government cannot build these because then the Government is getting into the power business, and that is socialism, and we have to stay away from it. Somebody has to build these plants or this power is always going to continue to go to waste except that which can be sold to the power companies. I think they find it very profitable to buy that dump because usually they

have some way of firming it. The power companies are not going to build these steamplants for us to firm this power. We feel it is, perhaps, the duty of the Government to firm this power to get the most out of it. It will bring the greatest return that way and most of these projects are based on a return to the Government to make them whole, even for some of the parts of the multiple-purpose projects that the load of power revenue is carrying.

There were some very astute questions asked here yesterday, I thought, on the part of the Honorable Senator from Colorado, in which I think he attempted to see if he could not put his finger on the cause of these problems that are occurring all over, so that they would know where the critical point was to take action. The gentleman to whom the questions were put was, I feel, a little reluctant perhaps to answer to the full extent of his knowledge, and I don't blame him. As the gentleman who spoke just before me said, it puts you in jeopardy sometimes, or puts you in an untenable position with the people with whom we have to deal. We find ourselves in that position; we are complaining about the Bureau's actions, and still we have to go up there and negotiate with them. It puts us in a very poor position.

I would like to point out that we feel we have no quarrel particularly with the local people in the Bureau of Reclamation. This policy that is being set and is being followed is not set by these local people. We feel that this policy is being set by the very high administrational level in the Department of Interior. These people on the local levels are career people and they have to take orders from the boss over here in Washington. We feel that it is all part of a master plan. I am not a bit unwilling to state what I think is wrong with this problem, because we fought it for years in Idaho, and we have a lot of evidence. In fact, we are told by the power chief of the Bureau's Power Division himself that we used to do these things, we used to assume utility responsibility, but the administration in Washington has changed and we can't do this any longer.

The greatest trouble, therefore, I think lies in the fact that the Bureau is now shirking and assuming that they are no longer in a position to have any utility responsibility. I think, to quote a phrase that our executive manager has used, it is all part of a master plan. Why else would we have a situation in the Missouri Basin that was similar to ours with the problems that are all stemming from the same point? Why would we have the Bonneville Power Authority attempting to institute a parcel post rate instead of a postage stamp rate which works to the detriment of the small cooperative and would be a great thing for the big power companies in that area? Why did we have a raise in rates in the Southwest Power Administration that was so disastrous to the cooperatives and other public agencies that were buying power from them there? Why was there an attempt made to give the falling water away on the Trinity River project in California?

Why is there unwillingness to integrate the U.S. Bureau system with the BPA system through the intertie of the Idaho Power Co.? Why were the Interior people not allowed to testify in the great Hells Canyon case as to what they thought was the best dam to build there? Why were the wheeling provisions removed from the rights-

of-way provisions of transmission lines over public lands in 1954, so that the Government could not any more require the use of excess capacity in those transmission lines to wheel power for themselves or their own customers?

The attempt to foist a high interest rate upon the REA's, and the removal of loan money from the REA's. These are all part of the same plan and coming from the same place. That is my firm opinion.

We out there in Idaho are not just crying in the wilderness because we are just a bunch of poor little cooperatives and municipals that don't have much funds to fight these battles with, and so forth, and that it is the duty of our Government to furnish us with low-cost power particularly, but we do think that when the power is there and somebody else is getting it, and they are getting it at rates that are ridiculously low, and when we try to buy it from them, their price to us is twice what we can afford to pay, is almost twice what they are retailing it for in competition to us right in our own area, then we think that we do have a case. That is exactly what we are complaining about and what we would like to get some help on.

Thank you very much, Mr. Chairman. If there are any questions I would be glad to try to answer them.

Senator CHURCH. Thank you very much, Mr. Schlender, for a very fine statement. I should like to say that I, too, have felt, and I know numerous members of this committee have felt, that in the past few years a pattern has developed that has been highly detrimental to the small cooperatives, to the REA's and to the municipalities, and highly advantageous to the private utility companies.

In your summation you made mention of one particular that I would like to stress for a moment. You referred to the fact that the provision that was once contained in the regulations of the Department of the Interior that required as a condition of the easement granted to a private utility company for building private utility wires over public lands, that any excess capacity that the wires might furnish should be made available for the wheeling of public power under compensatory arrangements, had been stricken from the regulations in 1954.

As I recall our hearings in May, this subject came up, and certainly the very fact that the co-ops in southern Idaho have had difficulty in obtaining their power needs and are dependent, so to speak, upon the use of private utility transmission wires, highlights the importance of having such a provision in the regulations, and highlights, I think, the public interest that is served by such a regulation.

Having that in mind, I addressed a letter to the present Secretary of the Interior, Mr. Fred A. Seaton, on January 28, 1959. I think it would be pertinent for purposes of the record this morning for me to read that letter into the record:

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
January 28, 1959.

Hon. FRED A. SEATON,
Secretary of the Interior,
Washington, D.C.

DEAR MR. SECRETARY: During the last 2 years I have made an attempt to assist the rural electric cooperatives and other public power users in southern Idaho in their efforts to secure an additional supply of power. One of the subjects discussed from time to time has been the feasibility of transmitting Federal

power from the Bonneville Power Administration system to the Bureau of Reclamation transmission system in southern Idaho, over lines constructed and operated by a private utility company.

It is my understanding that prior to August 1954, the regulations of the Department of the Interior enabled the Secretary to require a private utility whose lines crossed public domain land to wheel Federal power, subject to reasonable charges including amortization, as a condition of the grant of the easement.

I believe that this type of arrangement was in the public interest and that its validity was upheld in court proceedings. I am giving consideration to the introduction of legislation which would make this the statutory rule.

Characteristics of the load requirements in the Bonneville area and in southern Idaho, according to testimony furnished by the Bonneville engineers and Bureau of Reclamation officials, make this integration seem desirable from the point of view of both agencies. Both of them, and the Bureau of Land Management which has control of the public domain land, are under your jurisdiction. Therefore it is possible that you may desire to reimpose this requirement by regulation rather than have legislative action undertaken in this area.

It seems to me that it is in the public interest that the wheeling regulation be reinstituted. I do not know whether a change in the regulations would have any effect on the existing private powerline or furnish any help to the power-short cooperatives. However studies by the Bureau of Reclamation and Bonneville Power Administration show that the integration between the two systems would provide at least 13,000 kilowatts of firm power without the expenditure of public money to create new facilities. Had the regulation not been revoked, I believe this integration would have been established long ago.

Excess capacity is capacity otherwise wasted, and we cannot for long tolerate waste in the electric power field. Furthermore, the preference policy is ingrained in our law, and this type of regulation implements that policy.

I hope you will reinvoke the regulation, or a similar one. If you have determined not to, I will appreciate it if you will so advise me, so that I may introduce legislation to achieve the same result.

I would be more than pleased to discuss this matter with you, in your office or elsewhere, if you desire to do so.

Sincerely,

FRANK CHURCH,
United States Senator.

As yet I have not had a reply from the Secretary to that letter. I am hopeful to have one soon. I think this is a matter that needs to be corrected, that the regulation ought not to have been revoked in the first place, should be reinstituted now, and if not reinstated by administrative action, then it would be appropriate as a matter for the Congress to consider.

One other thing I should like to do, Mr. Schlender, is to include in the record at this point the followup correspondence that occurred after the May hearings so that all of the matters discussed there will be updated and incorporated with your testimony this morning.

(The correspondence referred to follows:)

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., May 23, 1958.

Mr. RAY W. RIGBY,
Attorney at Law,
Rexburg, Idaho.

DEAR MR. RIGBY: We appreciate receiving the petition of the Snake River Power Association, Inc., for the purchase of power from the Boise, Minidoka, and Palisades projects of the Bureau of Reclamation which you enclosed with your letter of May 7, 1958.

You are aware that most, if not all, of the views and requests of the association were given in testimony before the Senate Interior and Insular Affairs Committee on May 14 and 15, 1958. As you know, the Department orally advised the committee at that time that discussions with the Idaho Power Co. on power matters are to be promptly undertaken. The committee has requested that Mr. H. T. Nelson of the Bureau of Reclamation testify on southern Idaho power matters

as a part of the committee's study of the matter. The record, we believe, will probably clarify many of the problems relating to the power situation in southern Idaho.

We do want to assure you that it is our objective to supply the power requirements of your members and other preference customers to the maximum extent possible. As we advised the committee, we are pursuing the problems involved in integration with other Federal powerplants in order to take cognizance of the difference in time of the critical water years in the Snake and Columbia Rivers.

As soon as conclusions can be reached, the Bureau's regional director in Boise, Idaho, will get in touch with you and others in the area in an endeavor to work out the southern Idaho power problems.

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., August 14, 1958.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR SENATOR MURRAY: This is in reply to your inquiry of July 31 regarding coordination between Bonneville Power Administration and the Bureau of Reclamation which agreement is contingent, as you indicated, upon use of Idaho Power Co. transmission facilities.

As you know, at the hearings before your committee on May 14 and 15, the Bureau of Reclamation advised concerning the preliminary discussions that had taken place with the company. It is the company's position that the question of firming the Bureau of Reclamation's southern Idaho production should be considered from the standpoint of integration of the Bureau's southern Idaho system with the company's system rather than on the basis of integration of the Bureau and Bonneville systems through the method of Idaho Power Co. wheeling. This integration would be designed to achieve substantially similar benefits for Bureau customers as would the Bonneville-Bureau integration discussed at the hearings. The amounts of energy that would be firmed on the Bureau's system have been preliminarily determined, and the parties are actively pursuing solution of the remaining problems involved. We will keep the committee informed of progress.

The second inquiry is as to further negotiations we may have had with the Idaho Power Co. looking toward meeting the coordination requirements of the license for the company's Snake River dams.

BPA advised the company by letter of April 1, 1958, of the terms it considered appropriate for a coordination agreement. The matter was discussed at a meeting with the company on April 4, 1958. At that meeting the company desired some time to consider the terms of this agreement since they were also considering a coordination agreement with the Utah Power & Light Co., the Washington Water Power Co., and Pacific Power & Light Co. BPA has heard nothing further from the company regarding this matter. At the May hearings we learned, via the company's wire to the committee, that it had entered into certain agreements with other utilities in the Northwest Power Pool. The Washington Water Power Co. and Pacific Power & Light Co. have furnished Bonneville with a copy of the agreement dated April 23, 1958, between them and the Idaho Power Co. This contract has been filed with the Federal Power Commission. The extent to which operations under this agreement may fulfill the coordination requirement of the license is, of course, a matter on which the FPC is better able to advise the committee than is this department.

For its part, the department remains willing to enter into a coordination agreement along lines heretofore proposed to the company by BPA on April 4, 1958, which would insure sufficient summertime energy to permit the filling of Brownlee Reservoir every year. You will recall that there is in existence the February 10, 1955, exchange agreement between Bonneville and Idaho Power Co. under which the two parties currently exchange power. This agreement runs until 1974, subject to cancellation by either party on 3 years' notice after August 31,

1960. Under this agreement there is available to the company BPA summer surplus energy at 2½ mills per kilowatt-hour which the company may utilize if and when it is available to carry its load during the Brownlee filling period.

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
July 9, 1958.

EDWIN C. SCHLENDER,
Secretary, Snake River Power Association, Inc., care of Raft River Rural Electric Coop., Inc., Malta, Idaho.

DEAR ED: Thank you for your letter of July 1, giving me the followup on the Bureau's reply to your petition.

Harold Nelson is going to be in Washington this week on the Burns Creek matter, and I hope to be able to urge him to step up his negotiations with the Idaho Power Co. to wheel power to integrate the Bureau and BPA nets.

Sincerely,

FRANK CHURCH, *U.S. Senator.*

SNAKE RIVER POWER ASSOCIATION, INC.,
Burley, Idaho, July 1, 1958.

Hon. FRANK CHURCH,
U.S. Senate, Washington, D.C.

MY DEAR SENATOR: As a followup on the Columbia Basin problem hearings I am enclosing Mr. Harold Nelson's answer to the petition which we filed with the Department of Interior for more power.

It is interesting to note that he agrees with the findings of Bonneville and ourselves that at least a minimum of 13,000 kilowatts of firm power would be available with integration of the two Federal systems and what is very important to us there is also available as much as 24,000 kilowatts for irrigation pumping power, according to his figures on page two of the letter.

He also makes it plain that to realize this bonus the whole thing now rests with their ability to negotiate a wheeling contract with Idaho Power Co. and Idaho Power is making some studies concerning the problem.

Well, if we know Idaho Power they will continue to study and not be ready to negotiate from now on out.

For a year and a half the Raft River Electric Cooperative asked Idaho Power Co. for a delivery point and a rate to deliver power to a project of theirs and they put the cooperative off with the same excuse while they were in there trying to grab off the cream of the project themselves.

The question now is how to get Idaho Power to negotiate in time to do us any good.

It seems perhaps, that the only wedge we have is the integration requirement of the Federal Power Commission license on Brownlee Dam.

As yet we have heard of no move by them to attempt to integrate that project hydraulically with Bonneville although they have announced their plans for electrical integration with two other companies. (See news clipping enclosed.)

Idaho Power has always been quick to stop the building of Federal transmission lines by extolling the benefits of wheeling over their system and expressing their willingness to do so, why should the Bureau not now demand that they wheel this power for them also?

Very truly yours,

SNAKE RIVER POWER ASSOCIATION, INC.,
EDWIN C. SCHLENDER, *Secretary.*
(By Direction of the Board).

POWER TRADES DEAL RECEIVES OKAY OF PUC

BOISE, June 5 (UPI).—The Idaho Public Utilities Commission today approved surplus electric power sales and system-interconnection contracts between Idaho Power Co. and two Northwest utilities.

The Commission noted that the three firms—Idaho Power, Pacific Power & Light Co., and the Washington Water Power Co.—will thus be able to make a greater contribution to the Northwest Power Pool, of which they are all members.

In its order, the PUC said that the contracts "will result in added capacity for the three companies as well as for the pool, without additional powerplant investment; and through the coordinated use of regional power resources will make possible a more economic power supply for the benefit of their customers, and of power users throughout the Pacific Northwest States."

The Commission emphasized that Idaho Power's Brownlee and Oxbow hydroelectric developments on the Snake River "will add both capacity and flexibility to the Northwest Power Pool overall system and operation."

The PUC said it appeared that the charges, terms, and provisions of the tricompany agreements were "just, fair and reasonable," furthermore, it said the power and other services to be supplied and interchanged under the contract were "necessary and consistent with and in the public interest."

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Boise, Idaho, June 13, 1958.

Mr. RAY W. RIGBY,
Attorney at Law, Rexburg, Idaho.

DEAR MR. RIGBY: Under letter of May 23, Assistant Secretary of the Interior Aandahl responded to your letter of May 7, regarding the petition of the Snake River Power Association, Inc., for the purchase of power from the Bureau of Reclamation.

We have had a number of discussions with the Bonneville Power Administration and with the Idaho Power Co. to explore the possibility of firming up the southern Idaho Federal power generation to the level that can be supported by the diversity of streamflows in the Snake and Columbia Rivers. The studies we have conducted jointly with the Bonneville Power Administration indicate that, insofar as energy is concerned, the Columbia River plants could firm up the southern Idaho plants to the level of their production in a year like 1936–37, which is the critical year for the powerplants on the Columbia River. These studies indicate that with such firming assistance the Bureau would have available an additional 13,000 kilowatts of winter firm energy for sales and transmission losses. This figure is the average for the period September 16–April 15. The results of these studies are shown on the attached table 1. The firm load shown in the table represents requirements for pumping power on Bureau projects plus contractual commitments to existing customers. These loads will require all the firm energy production of the southern Idaho plants in the Snake River critical year 1934–35. The average generation shown on the table represents the generation in the year like 1936–37, and the excess of 1936–37 generation over the present firm load commitments is shown in the column headed "Surplus." You will note that the surplus as tabulated does not follow the firm load pattern. However, by interchanging energy between the southern Idaho plants and the Columbia River system during the power system storage release season (September 16 to April 15), the surplus southern Idaho generation could be shaped to follow the load pattern as indicated in the column headed "Shaped Surplus." The "Shaped Surplus" column has been filled out for the rest of the year in proportion to the load shape indicated in the "Firm Load" column. Thus, the "Shaped Surplus" column indicates the additional energy that would be available for firm loads and losses with integration on the basis above described. These are total load figures including both irrigation pumping and commercial type loads. An approximation of the amounts of energy that would be available for irrigation pumping and related losses can be obtained by subtracting 11 megawatts from the figures in the "Shaped Surplus" column. The figures resulting from such subtraction would be:

	Mw		*Mw*
April	2	August	24
May	17	September	17
June	21	October	4
July	24		

Detail study of load requirements probably would necessitate some adjustment of the above figures so as to fit them to actual load curves.

A vitally necessary function of any power system is that it must have the capability to produce and deliver energy at rates of delivery required from time

to time by the loads. This is commonly spoken of as peaking capability. Our studies indicate that the southern Idaho Federal plants will be faced with severe peaking deficiencies at times when the reservoirs are at low stages because of drafts of storage for irrigation or for flood control. The attached table 2 shows the prospective peaking deficiencies with our present operations; and you will note that, in circumstances like August 1931 and August 1933, the deficiency is about 40,000 kilowatts.

Table 2 also shows the peaking deficiencies in prospect if the southern Idaho plants were firmed up to the 1936–37 level on an energy basis. The estimated maximum rate of interchange in August 1931 and August 1933 is about 84,000 kilowatts.

The joint studies indicate that the amounts of power and energy needed to effect the firming of the southern Idaho plants could be made available from the Columbia River system without detracting from the firm power capability of that system.

The foregoing material demonstrates that the problem to be dealt with involves movement of a relatively small average amount of energy over a 20-year period. However, there would be times when the rates of energy delivered would be significantly high, on the order of 84,000 kilowatts. The provision of transmission capacity to accomplish such interchanges by means of Federal facilities appears to be uneconomic because of the great transmission distance for the small average amount of energy involved. Therefore, as a practical matter, we believe that, if the benefits of integration of the Federal systems are to be realized, it will be necessary to accomplish the integration through the existing and proposed transmission facilities in the area. You will recognize, of course, that the Bureau cannot increase the contract rates of delivery to its customers until arrangements are completed for obtaining the firming power and energy. As indicated previously, we have had some discussions with the Idaho Power Co. The company is conducting some studies which will form the basis for further discussions. Consequently, we are not able now to indicate to you what methods for accomplishing integration may be proposed as the result of further deliberations. However, you may be sure that we will continue with the integration studies and negotiations with the objective of attaining for the Government and the preference customers the maximum practical benefits that can be realized without jeopardy to our present rate structure.

As further information is developed on this matter, I will make it available to you. Meanwhile, you are welcome to visit this office for further discussions.

I am informed that the consulting engineers for the Snake River Power Association have completed a report on their studies of the Federal power operations in southern Idaho. If a copy is available, I would appreciate having one.

Very truly yours,

HAROLD D. NELSON, *Regional Director.*

TABLE 1.—*Integration of Federal powerplants in southern Idaho with Federal powerplants of the Columbia River power system*

[Bureau of Reclamation Loads and Resources—1936-37 Streamflows—Megawatts]

Month	Firm load	Average generation	Surplus	Shaped surplus	Firm resource	Interchange from BPA
July	115	156	41	35	150	[1] 0
August	115	156	41	35	150	[1] 0
September:						
1–15	93	147	54	28	121	[1] 0
16–30	93	147	54	28	121	−26
October	50	61	11	15	65	4
November	34	42	8	11	45	3
December	36	44	8	11	47	3
January	34	45	11	11	45	0
February	36	44	8	11	47	3
March	36	44	8	11	47	3
April:						
1–15	44	61	17	13	57	−4
16–30	44	61	17	13	57	[1] 0
May	92	156	64	28	120	[1] 0
June	107	150	43	32	139	[1] 0
Annual average	66	92	26	20	86	0
Storage release season average	42	55	13	13	55	0

[1] Excess of generation not shown as interchange as it will supply existing secondary loads of the Bureau.

TABLE 2.—*Estimated USBR southern Idaho peak deficiencies using 1928–51 water conditions*

[Megawatts]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Deficiencies with loads based on 1934-35 critical year											
1931								40	7	2		
1932				26				18				
1933				16				39				
1934								10	27	16		
1935				23				3	17	10		
1936				17								
1937				16				19				
1938				16								
1941				16				7				
1942				16								
	Deficiencies with loads based on 1936–37 critical year (with winter shaping)											
1928							6	8	4	1		
1929							6	8	24	22		
1930							6	33	15	20		
1931				1			26	84	44	33	3	5
1932	7	9	9	58	34	36	4	62	25	22		
1933				48	34		6	83	32	22		
1934				21	14	29	29	54	64	44	1	2
1935	5	8	12	55	34		6	47	54	38	1	4
1936	8	12	15	49			6	24		22		
1937				48			6	63	24	22		
1938				48			4	8		22		
1939							6	11	31	22		
1940				28			6	37	19	22		
1941				48	24		6	51	11	22		
1942				48	16		6	8		17		
1943					20	5						
1944									21	17		
1945									15			
1946								5	25	9		
1947									14			
1948								3	23			

RURAL ELECTRIC CO.,
Rupert, Idaho, July 22, 1958.

Senator FRANK CHURCH,
Senate Office Building,
Washington, D.C.

DEAR SENATOR CHURCH: Enclosed is a copy of a letter to the village of Heyburn regarding a powerload of a starch plant. This is located almost in the center of the village's electrical system, which now serves the property of J. R. Simplot. This is just an increase in load that the village already serves.

You will notice in paragraph 4 of the enclosed letter that the U.S. Bureau of Reclamation is taking time that would cause the village to lose this load.

Simplot wants to have Idaho Power Co. build to the plant, over the lines of Rural Electric Co., a mutual co-op of the Minidoka system and the village of Heyburn, a municipally owned system.

Simplot agreed with Heyburn to take power from them if they would withdraw the land from the village to reduce the taxes. Later he asked Heyburn to sell power at the same rate as Idaho Power rates. Heyburn agreed to this and withdrew the land.

We wonder if the U.S. Bureau of Reclamation and Idaho Power will study this so long that Idaho Power will have lines into the area to serve the larger loads while the smaller and higher cost loads are handled by our Minidoka system users.

If the village of Heyburn has no revenue either from power or taxes they have no means to pay for problems the plant brings with it.

Examples of this are sanitation and public health. There is a limit to how long people of Heyburn can drill a well in one end of their lots and dump their sewer in the other end. As they become more closely populated the water pollution will be greater. The sewer of the Simplot plant will add to the problem, whatever they do with it.

One of the members of the Snake River Power Association has power to spare for this load. They have indicated that with some mines shut down their load is temporarily lighter. These are higher cost mines and it is unlikely that they will start using power until the price of metal raises a lot. This would give Heyburn the temporary power they need.

We hope this expression of cooperation in this letter of the U.S. Bureau of Reclamation means what it says, as the member co-op that has extra power now is a contractor with the U.S. Bureau of Reclamation.

Heyburn has been contacted by Idaho Power officials to sell them power previous to receiving this enclosed letter. No rate has been proposed by Idaho Power as yet, although they have had 2 weeks or more to think about it. We wonder if the price may be high enough to force Heyburn to give up the load.

The U.S. Bureau of Reclamation letter seems to indicate an auxiliary power supplier and not an interchange between southern Idaho members.

Any help you may give us in the above matter will be appreciated by the Snake River Power Association and its members.

Sincerely yours,

JOHN L. BROG,
President, Snake River Power Association.

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
REGIONAL OFFICE, REGION 1,
Boise, Idaho, July 16, 1958.

VILLAGE OF HEYBURN,
Heyburn, Idaho.

GENTLEMEN: On July 15, 1958, Mr. Calvin Lowe, of the J. R. Simplot Co., visited this office to inquire regarding the availability of power for the company's new processing plant in Heyburn. The power requirements were stated to be as follows:

October 1958: 1,000 horsepower
1961: 2,205 horsepower
1963: 2,500 horsepower

Mr. Lowe was unable to state positively whether the above figures represent connected load or operating power requirements. We advised him that he should make his arrangements for power service with the village, rather than directly with the United States.

We understand that Mr. Lowe intends to discuss this matter with the village within the next few days and, therefore, we would like to bring you up to date regarding our efforts to make additional power available to the village. On October 10, 1957, the village applied for additional power or amendment of its present contract to permit it to negotiate for additional power from another source. The United States was not in a position to increase its contract rates of delivery and, in accordance with subsequent discussions with representatives of the village, we proceeded to clear with our Washington office a draft of amendatory contract which would enable the village to purchase additional power from an auxiliary power supplier. Several drafts were interchanged between Bureau offices, and recently we have been authorized to enter into an amendatory contract with the village if it so desires. The effect of the amendment would be to enable the village to purchase power from the United States in the amounts covered by the present contract and to purchase the village's additional requirements from another supplier. It would be the responsibility of the village to arrange for the auxiliary power supply. If it is necessary to utilize the Government facilities for delivery of the auxiliary power, we are willing to make the necessary wheeling arrangements with the auxiliary power supplier. With arrangements such as these, we believe that the village can supply the requirements of the new Simplot processing plant if it chooses to do so.

During the past several months, the Bureau has been also exploring the possibility of making arrangements with the Bonneville Power Administration and the Idaho Power Co. to firm up some of the secondary energy produced in the Federal powerplants in southern Idaho. We are encouraged to believe that measures of this type will enable the Bureau to increase its firm power sales and, no doubt, the village would participate in the benefits. However, the problem is a complex one, and our discussions to date do not indicate that early

resolution is in prospect. Therefore, we do not believe that the Bureau will be in a position to increase its contract rates of delivery to the village soon enough to cover the initial requirements of the new Simplot plant.

Because of the prospect that the Bureau, through the above arrangements, will have additional firm power for sale in the future, we suggest that any arrangements the village makes with an auxiliary power supplier should recognize the possibility that the village may have the opportunity to increase its contract rates of delivery with the Bureau. The technical aspects of any agreement that the village makes with an auxiliary power supplier should be carefully coordinated with the amended contract between the village and the United States. We will be pleased to assist you in this regard.

Very truly yours,

WM. H. TULLER,
Acting Regional Director.

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
August 2, 1958.

HAROLD T. NELSON,
Regional Director, Bureau of Reclamation,
Boise, Idaho.

DEAR HAROLD: You are aware, of course, that some of the problems which the rural electric cooperatives discussed last May in the Interior Committee hearings have continued to be of pressing importance. I have learned with a great deal of gratification that you are going to confer with representatives of the Snake River Power Association on the problem of the village of Heyburn in getting power to supply the starch plant which the Simplot Co. is constructing there this coming week.

I know that you are also aware of my continuing interest in the integration of the Bureau system with the Bonneville system and the negotiations with the Idaho Power Co. to use its facilities for the necessary wheeling between the two systems.

At your convenience, would you give me a report of the current status of these negotiations? It is too late in this session, of course, for any legislative action to take place, but if cooperative agreements cannot be reached voluntarily, I am giving consideration to the introduction in the next session of some type of legislation which would require the wheeling of Federal power over private facilities, where excess capacity exists, and where these facilities cross public lands.

I hope that you also can give me a report on any program that is worked out with the public power users at your meeting next Wednesday.

Sincerely,

FRANK CHURCH, *U.S. Senator.*

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
REGIONAL OFFICE, REGION 1,
Boise, Idaho, August 19, 1958.

Hon. FRANK CHURCH,
U.S. Senate, Washington, D.C.

DEAR SENATOR CHURCH: In your letter of August 2, you inquired regarding the progress of our discussions with the Snake River Power Association and also asked for a report of the current status of our negotiations with the Idaho Power Co. to effect integration of the southern Idaho Federal plants with the Bonneville system. It so happened that Mr. Don Campbell of the Commissioner's Office could arrange his schedule to be in Boise on August 6 and, accordingly, we arranged separate meetings on that day with both the Snake River Power Association and the Idaho Power Co.

The Snake River Power Association was represented by its board of directors; its attorney, Ray Rigby; and consulting engineer, William Trommershausen of the firm of R. W. Beck & Associates. The discussions were conducted on a frank, informal, and friendly basis, and we believe that the meeting has given all of us a better understanding of one another's desires, problems, and limitations. We advised the association that we were willing to negotiate for the sale of nonfirm seasonal energy for irrigation pumping purposes

on the basis of annual forecasts of availability as to time and quantity. Such sales would be firm on a year-to-year basis and would be made under firm power rate schedules. We suggested that, since this would require negotiating an amendment of the contract with the Idaho Power Co., if any of the members of the association desired to explore this further, they should analyze their requirements and advise us of the amounts and scheduling of such power as they could utilize.

The association urged that the Government increase its contract rate of delivery to the village of Heyburn on the strength of the prospect that unused firm power under contracts to others would satisfy Heyburn's requirements until integration arrangements are completed. None of the contractors present were willing to voluntarily reduce the amount of power under his contract for the benefit of Heyburn. Although there is presently unused firm energy available on the Minidoka system, which would be available in the immediate future to supply the village of Heyburn's increased load, the Government cannot contract for the firm sale of power already committed for future delivery to a third party on the basis of arrangements for an additional future supply that are only prospective as yet.

We also discussed with the association the prospects of arranging for additional power through coordination arrangements between the Idaho Power Co. and other utilities. We also believed that the complexity of these negotiations would preclude their completion by the October 1 date in which the village of Heyburn is interested.

Immediately following the above meeting with the association, we met with representatives of the Idaho Power Co. In our discussions with the company we restated the necessity for early completion of the coordination arrangements. The company representatives joined with us in the view that early completion is desirable. It is our understanding that the Idaho Power Co. is working out the coordination problem with the Northwest Power Pool by contracts with the Washington Water Power Co. and the Pacific Power & Light Co., plus possible purchases of secondary energy under its existing BPA contract. It is also willing to provide arrangements for firming the southern Idaho Federal plants. The company has studied the benefits of this type of integration, utilizing preliminary figures with respect to Government generation and Government loads, and verbally presented to us the principles on which the studies to date had been based, as well as preliminary energy figures to illustrate the approximate magnitude of the benefits as calculated on these bases.

It should be pointed out that the studies made thus far are exploratory in nature considering only the engineering aspects and, therefore, they do not represent a proposal on the part of the company or acceptance on the part of the Bureau. We believe, however, that the effort being made is indicative of the desire on the part of both parties to arrive at early resolution of the problem. We would like to add also that the August 6 meeting has been preceded by many informal contacts with the representatives of the company to inquire regarding the progress on the studies and to exchange basic technical information so that there actually have been many more discussions than simply those reflected in our above report of the August 6 meeting.

We appreciate the interest of your office and of the committee in seeking to firm up the Bureau's power supply in southern Idaho and want to assure you that we are pressing for the earliest practicable resolution of the problem.

Sincerely yours,

H. T. NELSON,
Regional Director.

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
August 27, 1958.

EDWIN P. SCHLENDER,
Secretary, Raft Rural Electric Cooperative, Malta, Idaho.

DEAR ED: Senator Church asked me to advise you that just before the adjournment of Congress, he received from Harold Nelson a report of the conference which was held in Boise on August 6 between your association and the Bureau. Harold referred to the discussions as being conducted on a frank, informal, and friendly basis. He said he believed that the meeting had given everyone a better understanding of each other's desires, problems, and limita-

tions. His report of the substance of the meeting was very close to what you told me on the telephone when I was in Boise.

As you know, the Senator is very interested in this problem, and he will appreciate it if you will keep him informed of your progress.

Sincerely,

JOHN A. CARVER, Jr.,
Administrative Assistant to Senator Frank Church.

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
September 24, 1958.

Mr. HAROLD NELSON,
Regional Director, Bureau of Reclamation, Boise, Idaho.

DEAR HAROLD: I hope that you will find it possible to give me a report sometime in the comparatively near future on the status of your negotiations with the Idaho Power Co., looking toward the integration of the Bureau system with the Bonneville system as discussed in the Senate hearings last May.

Sincerely,

FRANK CHURCH,
U.S. Senator.

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
REGIONAL OFFICE, REGION 1,
Boise, Idaho, October 6, 1958.

Hon. FRANK CHURCH,
U.S. Senate, Washington, D.C.

DEAR SENATOR CHURCH: I am responding to your inquiry of September 24 regarding the status of our negotiations with the Idaho Power Co. looking toward the integration of the Bureau system with the Bonneville system.

In my letter to you dated August 19, I made reference to a proposed coordination arrangement among the Idaho Power Co., the Pacific Power & Light Co., and the Washington Water Power Co. I have now learned that the above arrangement was made on April 23, 1958. Through this intercompany agreement, the Idaho Power Co. is proposing to firm up the Bureau's power supply in southern Idaho to what has been described as the 1935–36 level. This falls short of firming to the 1936–37 level which, of course, is a minimum requirement insofar as the Bureau is concerned. Negotiations are continuing as to ways and means of getting up to the 1936–37 level, which may be possible of accomplishment through other resources available to the company.

As you know, the company must make certain integration arrangements in satisfaction of its Brownlee-Oxbow-Hells Canyon license from the Federal Power Commission. It appears that the company has chosen to meet these requirements through the intercompany agreements rather than through a direct agreement with Bonneville. Service through company facilities would be required to effect integration of the Federal Snake River system in either case. We are working for an arrangement whereby the Federal Snake River power system can be firmed up to the 1936–37 water level and still maintain our basic wholesale rate structure.

We are now drafting a form of contract with the intent of replacing the present 1950 and 1956 contracts between the company and the Government with a single contract which will provide for the terms and charges associated with (1) the required firming through coordinated operation, (2) use of company transmission facilities, and (3) interchange and sale of surplus energy. Since you are, I believe, familiar with the 1950 and 1956 contracts, I am sure you can appreciate the careful work that is necessary in this drafting task.

Concurrently with the drafting, our engineers are working with company engineers in the studies required for determination of power and energy quantities and other factors needed in the agreement. I believe that up to now satisfactory progress is being made, and I can assure you that we will continue to concentrate our efforts on this problem until it is completed.

Sincerely yours,

HAROLD T. NELSON,
Regional Director.

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
October 9, 1958.

EDWIN SCHLENDER,
Secretary, Raft Rural Electric Cooperative, Malta, Idaho.

DEAR ED: In a recent letter received from Harold Nelson I am informed that the Bureau of Reclamation is now drafting a form of contract with the intent of replacing the 1950 and 1956 contracts between the Idaho Power Co. and the Government, with a single contract which will provide for the terms and charges associated with—

(1) the required firming through coordinated operation;
(2) use of Idaho Power Co. transmission facilities; and
(3) interchange and sale of surplus energy.

Concurrently with the drafting, Mr. Nelson reports that the Bureau engineers are working with the company engineers in the studies required for determination of power and energy quantities and other factors.

The regional director says that he believes satisfactory progress is being made. I assure you that I will continue to emphasize this matter through the Senate Interior Committee and personally, for I recognize the immediate needs which your association has.

Sincerely,

FRANK CHURCH,
U.S. Senator.

Senator CHURCH. I want to thank you for coming. Senator Moss, do you have any questions?

Senator Moss. No, I think not; except following up your letter, Senator, it is my understanding that this requirement that the private utility wheel power as a condition of the easement of the private powerlines across public lands had been in the regulations for about 30 or 40 years before it was taken out in 1954; is that right?

Mr. SCHLENDER. That is correct.

Senator Moss. Then it was lifted out in 1954.

Mr. SCHLENDER. There is a complete record of that, Senator, in the Chudoff hearing on the regulations adversely affecting rights-of-way across public lands, or something of that sort. It is quite a thing to note that the Idaho Power Co. and the Pacific Gas & Electric Co. of California are the ones that fought this regulation. Prior to 1954, they had taken it to the highest courts in the land, the court of appeals and the Supreme Court, and they were beaten. Then in 1954 they assumed different tactics, and they got the counsel for the Under Secretary of the Interior, who at that time, I believe, was Ralph Tudor, to just strike it out of the regulations without any notices to the public, any public hearings, and nobody even knew it happened until several months later. But that is all a matter of record in this public hearing.

Senator Moss. This was simply a departmental change of the regulations without any hearing or notice at all.

Mr. SCHLENDER. That is right. The counsel for the Under Secretary at that time admitted that he rewrote and reinstituted the regulations verbatim as they were given to him by the power company attorneys.

Senator Moss. Thank you. That is all I have, Mr. Chairman.

Mr. SCHLENDER. Thank you very much.

Senator CHURCH. I want to say one other thing, Mr. Schlender, and that is that I concur in your view that the committee should have an opportunity to review the contract that is entered into, if one is entered into, between the Bureau and the Idaho Power Co. prior to the signing of the contract in order that we can ascertain the full content of the

contract and review it in the light of what your needs may be in southern Idaho.

Mr. SCHLENDER. Thank you very much.

Senator CHURCH. Your testimony this morning has been very helpful. Thank you very much for coming.

Mr. SCHLENDER. Thank you, sir.

Senator CHURCH. Our next witness this morning is Mr. Howard Scott, of the Upper Colorado Basin States group. Mr. Scott.

STATEMENT OF HOWARD SCOTT, CHAIRMAN, UPPER COLORADO BASIN PREFERENCE USERS COMMITTEE, DENVER, COLO.

Mr. SCOTT. Thank you, sir.

Senator CHURCH. I want to welcome you to the committee this morning, Mr. Scott.

Mr. SCOTT. Thank you, Mr. Chairman.

Senator CHURCH. I notice you have a prepared statement. Would you like to have this statement included in the record in the text form and highlight the statement this morning in preference to reading it?

Mr. SCOTT. I believe so.

Senator CHURCH. Why don't we do that. We will have the benefit of the full text, and then you can emphasize those points you would like to specially call to our attention.

Mr. SCOTT. Mr. Chairman, members of the committee, I am Howard Scott, chairman of the Upper Colorado Basin Preference Users Committee. I live in Denver, Colo. I would like to introduce to you Norton Davis, manager of the Plains Generation and Transmission Cooperative of Albuquerque, N. Mex., and member of our executive committee, who will testify later.

We are pleased to have this opportunity to meet with the members of the Senate Interior and Insular Affairs Committee.

We have supplied to you a copy of the background of our committee. We wish to emphasize that this preference committee operates not to set policy, but to coordinate activity of preference user groups within each State of the upper basin. Each State then looks after its own interest and deals with its own State agencies and independently with the Bureau. We merely try to coordinate that activity. Since most power policy rests on water policy, and water policy, we hope, is a State concern, we leave that determination to the States.

The upper basin in that it encompasses four States and part of another is a very substantial area, and this coordination we feel is necessary. There have been several recent studies, one a part of the project itself of the power demands in this particular area of the country, one by the Federal Power Commission was recently updated. All of them show a substantial and growing demand for power in the area. They also show that the demand may well exceed capacity in the area in spite of considerable activity by most of the area's utilities. None of the large systems is interconnected. This tends to add to this problem.

Our committee has not been in operation very long but our studies indicate that there will be a preference demand roughly equal to the output of the powerplant of the Upper Colorado River projects. The magnitude of this demand has been a surprise to some people,

but we have tried to ground it very carefully on past experience, and we believe it is accurate. We have supplied this information to the regional office having jurisdiction in Salt Lake, and also to the Department of Interior here in Washington.

We think this demand is of sufficient magnitude and of such size that it will require a reevaluation of the power features of the project and some of the considerations that went into it at the time the hearings were had.

The commercial companies of the area during the hearings made an offer to the Congress to build some parts, perhaps, of the transmission system necessary to deliver the project power at the load centers and to preference users. We think with the growth of the preference demand in the area that the assumption that their presentation rested on has been severely weakened. In fact, the rising preference demand, because of that demand, we wish to urge initiation at the earliest time of the Curecanti unit of the upper basin, because it fits so neatly in the system as far as power goes, and is a vital unit of the control features. This unit by its particular location would add materially to the ability of delivery of this project power over the long distances involved in our kind of country. Without it you have some problem of pushing power far enough to actually serve preference customers in the basin area.

The States of the upper basin, including Colorado, Arizona, have insisted that power produced in the basin be used in the basin. In this we most heartily concur. A transmission system for the project was authorized in the act itself, Public Law 485—powerplants, transmission facilities, and appurtenant works. Section 7 reads:

> The hydroelectric powerplants and transmission lines authorized by this act to be constructed, operated, and maintained by the Secretary shall be operated in conjunction with other Federal powerplants, present and potential, so as to produce the greatest amount of firm power and energy that can be sold at firm power and energy rates.

This firm power problem is what you have heard discussed from the Missouri Basin and your area, Mr. Chairman.

This in turn ties directly to the language used by the Interior Department in its report to the Congress, Senate Document 101, 85th Congress, page 5:

> To carry out the provisions of the law, a high-voltage transmission and grid will be constructed to interconnect the plants of the authorized units of the storage project and to effect interconnection with other existing Federal powerplants and utility systems in the area.

This is the kind of system that we have in mind. It is the kind of system we have shown schematically on the large map on the easel and in the little map that is in the material we supplied to you. We want to emphasize that this is schematic and not necessarily keyed to topography and the problems of actual construction.

This system does interconnect the project units of the upper Colorado project, and also existing Federal and private utilities in the area. You will find that this particular outline here compares closely with the systems schematically outlined in the project report on the upper Colorado River project of the Bureau, House Document 364, 84d Congress, 2d session. Plate facing page 162. So it would seem that our problems are pretty well in hand, but we are not so certain.

The Bureau is giving some study, somewhat late, to the engineering, and line voltage size that will be required for any kind of system.

Our problem, as we see it, is simply one of getting a clear declaration that the backbone and transmission system recommended for building in a project report, the authorizing act and subsequent documents, will in fact be recommended for building by the Bureau and by the executive department. Perhaps it will be, but with the necessity for initiation of actual line construction pressing upon us, and that must begin in fiscal 1963 to be ready by the time the turbines are working in 1963, if all goes well on the project, we cannot get a determination from the agency on line location, on line voltage, on service area, on load center location, or anything on the allocation of power to users. We are not alone in this problem. As always we have sought to work with the other utilities in the area. In discussions with them I find they are in the same quandary. No utility system in the area can safely make plans on generation facilities or major transmission lines until these answers are available.

The system we have proposed has neither been accepted nor rejected. I checked with a responsible official of the major Colorado utility just before leaving Colorado, and he had no new information and no clear indication of the final decision on what will be recommended. Our urging that these determinations be made has been joined by the utility systems in the area so that we can all get busy on other things we need to do.

We believe the system we have outlined, that is, a very high voltage Federal system interconnected not only to the project powerplants, including Curecanti, but also other Federal systems in the area, is the most logical because it will deliver project power over the widest possible area of the upper basin. It will insure the required maximum power return to the Government for assistance to participating projects. It will make available to other utilities whatever surplus power will be available. It will provide for the maximum integration of all systems in the area with benefit to all consumers from area diversity and decreased plant cost. It will lay a foundation for a future power pool of all systems. Finally, it will lay the foundation for the maximum development of the whole upper basin area.

For all of this, it does not solve all problems. This backbone system will still leave many problems to be solved, but these cannot be solved or even worked on with much accuracy until the major lines are in place, and the load centers are defined.

We will do as much building as we can on our own. We have some steam capacity in the area. We are doing some line buildings in the area, and we will continue our cooperative efforts with the Bureau and other utilities.

Our Utah member, representing the Intermountain Consumer Power Association of Utah was unable to remain in Washington. I would like to add his presentation into the record, if I could.

Senator CHURCH. The presentation will be received.

(Mr. W. Berry Hutchings' presentation of "Electrical Power Requirements Necessary for Economic Growth in Utah" will be found in the committee's files.)

(The prepared statement of the witness follows:)

STATEMENT OF HOWARD SCOTT, CHAIRMAN, UPPER COLORADO BASIN PREFERENCE USERS COMMITTEE

Mr. Chairman and members of the committee, I am Howard Scott, chairman of the Upper Colorado Basin Preference Users Committee. I live in Denver, Colo.

We are pleased to have this opportunity to meet with members of the Senate Interior and Insular Affairs Committee.

We have supplied to you a copy of the background of our committtee. We wish to emphasize that this preference committee operates, not to set policy, but to coordinate activity of preference user groups within each State of the upper basin. Each State group works with other power users, with Bureau officials, and with its own State agencies. We leave State policy to the States.

We feel that this coordinating committee is necessary because of the vast area of the upper basin. We try to work closely with the Upper Colorado River Commission, but our functions differ.

Recent studies of power demand in the upper basin area, including a broad survey by the Federal Power Commision, show a great and increasing demand for electric energy in the four-State area. Demand may well exceed capacity even in the face of substantial additions to plant now underway or scheduled by the area's utilities, especially in the absence of interconnection of existing systems.

The studies compiled by our committee show a preference demand in the upper basin area roughly equal to project capability over the average of years. This you can see from the charts.

The magnitude of this potential preference demand has been surprising to many people, but we believe it to be accurate. Any projection is subject to error, but these have been grounded on past experience.

Our preference group has supplied to the region IV office of the Bureau in Salt Lake and to the Department of Interior here in Washington the information we are presenting to you here, plus certain supplementary data they have requested.

We believe this preference demand is of such magnitude that it requires a reevaluation of the earlier assumptions of some private construction of some phases of the interconnecting and transmission system, and indeed of any major distribution system.

The proposal of the commercial companies made to this committee while the upper Colorado storage project was under consideration rested on the assumption that power surplus to preference users would be available in large blocks and for long periods of time to the commercial companies. This assumption is severely weakened by the increase of preference demand, although some power will be available to them and total power available can be increased by interconnection.

In fact, with the rising preference demand, we wish here to strongly urge that every effort be made to initiate construction of the Curecanti unit at the earliest practicable time—meaning fiscal 1960. It is a vital link of the upper basin chain and should be built concurrently with the other major units.

This unit would contribute materially to the early construction of an integrated power system capable of delivering all project power to load centers. Without Curecanti on the line, the distances involved will materially weaken the feasibility of delivering Glen Canyon power to load centers throughout the upper basin area. As you know, the great bulk of power will be produced at Glen Canyon, the unit most distant from logical upper basin load centers.

As members of this committee know, the States of the upper basin, including the State of Arizona which has some area in the upper basin, have insisted that power produced in the basin be used in the basin. In this we most heartily concur.

What kind of system for power do we have in mind?

It was authorized in the act (Public Law 485) itself—necessary power features including, "powerplants, transmission facilities, and appurtenant works." In addition, section VII reads, "The hydroelectric powerplants and transmission lines authorized by this act to be constructed, operated, and maintained by the

Secretary shall be operated in conjunction with other Federal powerplants, present and potential, so as to produce the greatest amount of firm power and energy that can be sold at firm power and energy rates * * *."

This in turn ties directly to the language used by the Interior Department in its report to the Congress (S. Doc. 101, 85th Cong., p. 5): "To carry out the provisions of the law, a high-voltage transmission and grid will be constructed to interconnect the plants of the authorized units of the storage project and to effect interconnection with other existing Federal powerplants and utility systems in the area."

Going on relative to this complete electric connection of the project units, the report adds that, "The high-voltage lines from storage-unit switchyards to substations at major load centers * * * is necessary * * * to provide interconnection with future units * * * and with other Federal plants and to provide for interconnection of future participating project transmission lines with the high-voltage grid."

This is precisely the system we have recommended to the Bureau and to the Department—as shown schematically on this large map and on the small maps before you. As you will note, this system does interconnect the project units, other Federal systems, and major load centers. It is all there in one package.

Incidentally, you will find that this compares closely with the system schematically outlined in the project report (H. Doc. 364, 83d Cong., 2d sess., plate facing p. 162).

What then is our problem? Well, washing out some pretty complicated engineering problems on line voltage and actual line location on which the Salt Lake office of the Bureau is now working, it is simply the problem of getting a clear declaration that the backbone and transmission system recommended for building in the project report, the authorizing act and subsequent documents will be recommended for building by the Bureau and by the executive department.

Perhaps it will be, but with the necessity for initiation of actual line construction pressing upon us, which must begin in fiscal 1961 to be ready when the power becomes available, we cannot get a determination from the agency on line location, line voltage, service area, load-center location, or anything on the allocation of power to users.

Nor are we alone. As always, we have sought to work with the other utilities in the area. In discussion with them, I find that they are in the same quandary. No utility system in the area can safely make plans on generation facilities or major transmission lines until these answers are available.

The system we have proposed, or adopted if you prefer, has neither been accepted nor rejected. I checked with a responsible official of the major Colorado utility just before leaving Colorado, and he had no new information and no clear indication of the final decision on what will be recommended. We are at a standstill.

We believe the system we have outlined; that is, a very high-voltage Federal system interconnecting not only the project powerplants including Curecanti but also other Federal systems in the area, the most logical because:

1. It will deliver project power over the widest possible area of the upper basin;
2. It will insure the required maximum power return to the Government for assistance to participating projects;
3. It will make available to other utilities whatever surplus power will be available;
4. It will provide for the maximum integration of all systems in the area with benefit to all consumers from area diversity and decreased plant cost;
5. It will lay a foundation for a future power pool of all systems;
6. It will lay the foundation for the maximum development of the whole upper basin area.

For all of this, it does not solve all problems. This backbone system will still leave many distribution problems unsolved, but these cannot be attacked until the major lines are in place and the load centers spelled out. We will do what we can on our own, and continue our cooperative efforts with the Bureau and with other utilities. Thank you.

Total load and load centers of preference users, upper Colorado River project market area

State and load center	1963 (kilowatt)	1968 (kilowatt)	1975 (kilowatt)	Type of load
New Mexico: Albuquerque	100,000	150,000	200,000	REA municipal.
Utah: Provo, Vernal, and Bountiful-Glen Canyon	140,000	183,000	225,000	Do.
Wyoming: Sinclair-Flaming Gorge	50,000	200,000	350,000	REA municipal; private.
Colorado:				
(*a*) Western: Cortez, Gunnison, Colibran, and Craig.	90,000	150,000	270,000	REA municipal.
(*b*) Eastern: Existing grid	[1] None	100,000	160,000	Do.
Arizona				
Total, upper division States	365,000	813,000	1,209,000	

[1] Load may develop by 1963, since current cutoff date on availability of region 7 power is 1961.

TABLE A.—*Actual energy consumption of rural electric systems in the western Colorado marketing area of the Colorado River storage project by calendar year*

	1944	1946	1947	1949	1950	1951	1952	1953	1954	1955	1956
COLORADO											
Grand Valley Rural Power Lines, Inc	1.28	2.24	2.82	4.38	5.18	6.07	7.14	8.04	8.99	11.1	12.9
San Luis Valley Rural Electric Cooperative	1.33	4.50	3.80	4.29	9.55	15.25	7.81	8.04	24.30	26.5	34.5
Gunnison County Electric Association	.38	.44	.52	.72	.91	1.08	1.16	1.16	1.33	2.4	4.0
Delta-Montrose Rural Power Lines Association	1.38	1.68	2.29	3.95	4.69	5.29	5.88	6.49	6.88	7.5	8.3
San Miguel Power Association	.78	1.01	2.39	4.80	4.01	8.64	11.74	15.44	2.85	25.6	30.8
La Plata Electric Association	.82	1.25	2.22	3.85	4.91	6.02	6.79	7.67	8.75	9.2	10.8
Empire Electric Association	1.71	3.20	4.52	7.77	9.10	10.16	11.20	12.89	14.83	17.7	20.0
Holy Cross Electric Association	.62	.90	1.11	1.90	2.24	2.85	3.46	4.93	7.28	8.0	7.1
Yampa Valley Electric Association	.30	.52	.56	1.40	1.99	2.88	15.68	16.05	17.61	20.0	24.3
White River Electric Association	------	.65	.83	1.21	1.56	1.83	2.10	2.35	2.72	3.2	3.8
North Park Rural Electric Association (mountain parks)	------	------	------	------	.21	.94	3.35	8.34	12.98	14.6	16.7
Total	8.60	16.39	21.06	34.27	44.35	61.01	76.31	91.40	108.52	145.8	173.2

Selected areas, kilowatt-hour growth, Upper Colorado Basin

[Annual kilowatt-hours]

	New Mexico	Utah	Western Colorado	Total
1958	305,000,000	400,000,000	225,000,000	930,000,000
1959	340,000,000	450,000,000	253,000,000	1,043,000,000
1960	380,000,000	480,000,000	283,000,000	1,143,000,000
1961	425,000,000	520,000,000	316,000,000	1,261,000,000
1962	472,000,000	560,000,000	355,000,000	1,387,000,000
1963	522,000,000	600,000,000	397,000,000	1,519,000,000
1964	558,000,000	640,000,000	445,000,000	1,543,000,000
1965	598,000,000	680,000,000	498,000,000	1,696,000,000
1966	635,000,000	720,000,000	547,000,000	1,902,000,000
1967	672,000,000	760,000,000	601,000,000	2,034,000,000
1968	712,000,000	800,000,000	662,000,000	2,174,000,000
1975	980,000,000	1,100,000,000	1,290,000,000	3,370,000,000

Mr. SCOTT. As far as the State of Wyoming is concerned, and eastern Colorado, most of the systems in that area are presently being

applied by the Bureau of Reclamation from an existing Bureau grid. It is a little difficult to precisely define what their power demands will be because it depends on the system deficiency. They have presently from the Bureau a cutoff date of supply of 1961. At some time from this existing grid there will be a deficiency, but we are not certain when or what magnitude. We are sure it will exist, and it will be of considerable magnitude over a period of years.

Finally, I would like to mention that the kind of hearing that has been had these 2 days is indicative of the need, I think, of the adoption of something like Senate Resolution 71. We would like to add our support to that resolution.

Senator CHURCH. Is there any particular service that this committee itself might render that would be helpful to you in connection with the problems you have raised this morning?

Mr. SCOTT. Our present problem—we have many—as I have indicated, is getting this determination made of the service area, the line voltage, the load centers, these basic problems spelled out by the Department of the Interior.

Senator CHURCH. Anything that this committee can do that would expedite these determinations by the Department would be helpful to you in your plan?

Mr. SCOTT. It would be helpful to the preference users and also to the other private utilities in the area.

Senator CHURCH. Senator Moss?

Senator Moss. Isn't there a budget problem, too, in supply funds for the Bureau to go ahead to complete this survey on line location?

Mr. SCOTT. They received what appeared to them to be an adequate appropriation for the studies last year. As far as I know, the amount included in this year's budget is adequate for the continuation of those studies. The only problem is that they started late.

Senator Moss. There is not any inclusion of funds to begin building any interconnecting lines?

Mr. SCOTT. No. We had had some hope and had a feeling that perhaps the Bureau in Salt Lake had some hope that those would be included this year. It did not show up in the budget. If they come as early as fiscal 1961, I think we will or they will be able to complete the line building by the time the project units are on the line.

Senator Moss. You think it will be possible to do it in time if we get the fund in 1961.

Mr. SCOTT. There will be no surplus of time, but I understand they are of the opinion they can have it done in time.

Senator Moss. Thank you, Mr. Chairman.

Senator CHURCH. Thank you very much, Mr. Scott.

Mr. SCOTT. Thank you.

Senator CHURCH. Mr. Norton Davis. Welcome, Mr. Davis. We are happy to have you here.

STATEMENT OF NORTON DAVIS, MANAGER, PLAINS ELECTRIC G. & T. COOPERATIVE, ALBUQUERQUE, N. MEX.

Mr. DAVIS. Mr. Chairman and members of the committee, I would like to talk from notes, if I may.

Senator CHURCH. You certainly may.

Mr. DAVIS. My name is Norton Davis, Albuquerque, N. Mex., manager of Plains Electric Generation and Transmission Cooperative. Also a member of the Upper Colorado Preference Users Group.

The Plains system serves the major portion of the member cooperatives in the State of New Mexico and a number of the municipalities through its member systems.

We are also interested in power from the upper Colorado project for the towns of Gallup and Farmington, which are municipals in the State. I would at this time like to submit a letter and some information that I received while here in Washington from the town of Gallup, if I might, relative to their needs.

Senator CHURCH. The letter will be included at this point.

(The information referred to follows:)

TOWN OF GALLUP ELECTRIC POWER,
Gallup, N. Mex., February 3, 1959.

Mr. NORTON DAVIS,
Colorado Basin Preference Users Committee,
Washington, D.C.

DEAR MR. DAVIS: Enclosed find our recapitulations of the actual power used for a period of years, showing peak demands and total generation. Also tables of estimated demands and generation to cover some years in the future.

The power demand has been increasing a large percentage each year, and we are forced to make a choice between purchasing power from some source or installing additional generation in our plant to meet this expansion. It is very evident that there will be additional schools, hospital, mining, and industrial demands as well as more housing.

Our water supply is getting low. We are supplied from wells and the water table has fallen alarmingly. In order to get a proper supply, we will be forced to pump it from a supply brought down from the San Juan district to Newcomb, about 54 miles from Gallup to the north. Water from this source would have to be pumped a thousand feet higher, and the power to do this pumping is beyond our capacity. Bonds would have to be issued by the town of Gallup; but by purchasing power we would be able to combine our bonding capacity with the town of Gallup and meet the estimated cost of pumping—approximately $5,500,000.

We sincerely hope that it will be possible for the Gallup Electric Power to purchase power from the line extending from that area.

Any information you can give us will be greatly appreciated.

Very truly yours,

GALLUP ELECTRIC POWER,
By D. A. HENDERSON, *General Manager.*

Gallup electric power

GENERATION LESS AUXILIARIES

Year	Peak demand	Total generation	Net generation
1953	5,400		22,650,000
1954	6,100		25,702,522
1955	6,250		27,573,432
1956	7,250		30,840,282
1957	8,300		33,824,393
1958	8,650		39,503,469
1959	[1] 10,630		[1] 42,450,920
1960	[1] 12,000		[1] 46,670,000
1961	[1] 13,580		[1] 52,700,000
1962	[1] 15,350		[1] 58,670,000
1963	[1] 17,350		[1] 67,200,000
ACTUAL—12 MONTHS ENDING AUG. 31, 1958			
1957—September	6,650	3,082,000	2,743,760
October	7,000	3,293,000	2,939,920
November	7,750	3,530,000	3,160,444
December	8,300	3,959,000	3,529,886
1958—January	8,000	3,921,000	3,482,385
February	7,700	3,495,000	3,092,731
March	7,400	3,698,000	3,249,195
April	7,400	3,358,000	2,943,462
May	7,275	3,671,600	3,219,952
June	7,200	3,538,000	3,094,741
July	7,400	3,863,000	3,404,181
August	7,700	3,924,000	3,471,063
September	[2] 7,750	[2] 3,780,000	[2] 3,353,286

[1] Estimated.
[2] For comparison.

Gallup electric power—Estimated kilowatt demands

Month	Percent annual peak	1960	1961	1962	1963
January	85.1	10,212	11,557	13,063	14,765
February	81.9	9,828	11,122	12,572	14,210
March	78.7	9,444	10,687	12,080	13,654
April	78.7	9,444	10,687	12,080	13,654
May	77.4	9,288	10,511	11,881	13,429
June	76.6	9,192	10,402	11,758	13,290
July	78.7	9,444	10,687	12,080	13,654
August	81.9	9,828	11,122	12,572	14,210
September	82.4	9,888	11,190	12,648	14,296
October	84.3	10,116	11,448	12,940	14,626
November	93.4	11,208	12,684	14,337	16,205
December	100.0	12,000	13,580	15,350	17,350
Total		119,892	135,677	153,361	173,343
Average		9,991	11,304	12,780	14,445

NOTE.—Ratio average to maximum demand 9,991+12,000=83.26 percent.

Mr. DAVIS. They have pointed out that if this power or some of it can be made available in the next few years, it will save the town in the neighborhood of five and a half million dollars which they could use in their water system which they badly need, instead of additional generating capacity.

The members from New Mexico would like to ask this committee to work with the Bureau of Reclamation in getting us the information for the location of the lines and the size of the lines so that we might go ahead with our own program for interconnection at a later time.

We would like the Bureau to build the main grid backbone system of 230,000 volts or higher lines, and we propose that this come into what we call the 39th Power Pool at Albuquerque where the interconnection is made of the Plains system, the Continental Divide system, the Bureau of Reclamation, Public Service Co. of New Mexico. It is an ideal point for distribution. The 39th Power Pool is interconnected with the El Paso Electric Community Public Service, Bureau of Reclamation, Plains & Public Service Co. of New Mexico. We at the present time have very little Bureau power or waterpower. As preference users some of the State members feel that we have not asked for enough of the power for New Mexico. We thought that it was adequate at the time, but the need is increasing.

For example, the city of Martington and its area had a 48-percent increase last year. In our member system it has been from 10 to 30 percent in past years. Anything you might do to speed up this facility or this information we would greatly appreciate.

Senator CHURCH. I appreciate your coming and testifying. Actually your problem is very similar to the problem just related by the previous witness.

Mr. DAVIS. That is right. We have formed this group so we could work together and not have differences in the Upper Colorado Basin.

Senator CHURCH. Thank you very much.

Mr. DAVIS. Thank you.

Senator CHURCH. Your statement may appear in the record at this point.

(The statement referred to follows:)

STATEMENT OF NORTON DAVIS, MANAGER, PLAINS ELECTRIC GENERATION & TRANSMISSION COOPERATIVE, INC.

My name is Norton Davis, and I am the manager of the Plains Electric Generation & Transmission Cooperative, Inc. I also am a member of the Upper Colorado Preference Users Committee, representing the following States: Wyoming, Utah, Colorado, and New Mexico.

Plains Electric is a generation and transmission cooperative serving 11 member cooperatives in the State of New Mexico, which supply power to their members from the Mexican border into Colorado and some into Arizona, also serving the municipalities of Springer, Carrizozo, and with an interconnection with the city of Raton.

As is readily seen, Plains Electric Generation & Transmission Cooperative reaches most of the State through its own facilities and the facilities of its member cooperatives. Plains has interconnections with the Public Service Co. of New Mexico, El Paso Electric Co., Community Public Service Co., and the Bureau of Reclamation, all of which is commonly known as the 39th Power Pool in New Mexico.

Plains Electric owns a 115-kilovolt transmission line, has wheeling rights on the Bureau of Reclamation 115-kilovolt transmission line and on the 69-kilovolt transmission lines of the member cooperatives, with substations located at all the principal points of operation of its members.

The cooperatives have had a substantial influence on the growth of New Mexico. Their power use has shown a constant increase of from 10 to 30 percent since the inception of Plains Electric. There is a great potential for additional development in the State if large blocks of economical power can be made available from the Glen Canyon project. We will also be interested in seeing that the municipal operations of the towns of Farmington, Aztec, and Gallup receive their share of power from the Glen Canyon project.

You will find attached hereto copies of estimates of load needs and growth, together with a map[1] showing lines and proposed lines to load centers of the State.

[1] The map may be found in the committee files.

TABLE A.—*Actual energy consumption of rural electric systems in New Mexico marketing area of the Colorado River storage project by calendar year*

[Kilowatt-hour in 1,000,000's]

	1952	1953	1954	1955	1956	1957	1958
Central New Mexico Electric Cooperative, Inc.	8.01	10.44	12.04	12.98	14.37	14.69	15.74
Columbus Electric Cooperative, Inc.	10.06	20.16	17.89	18.57	16.85	16.82	17.59
Continental Divide Electric Cooperative, Inc.	10.58	12.51	11.52	20.24	42.36	50.33	56.49
Jemez Mountains Electric Cooperative, Inc.	11.87	12.40	14.14	13.55	15.83	17.31	18.64
Kit Carson Electric Cooperative, Inc.	6.05	7.03	7.65	9.53	10.90	11.31	12.53
Mora-San Miguel Electric Cooperative, Inc.	2.08	2.32	2.75	2.90	3.17	3.24	3.55
Northern Rio Arriba Electric Cooperative, Inc.	1.87	2.31	2.78	3.77	4.36	4.80	5.51
Otero County Electric Cooperative, Inc.	5.00	7.33	10.13	11.32	14.27	15.14	16.62
Sierra Electric Cooperative, Inc.	1.14	1.44	1.76	1.74	1.68	1.71	1.92
Socorro Electric Cooperative, Inc.	8.16	10.52	11.36	15.57	19.27	20.96	22.67
Springer Electric Cooperative, Inc.	22.40	23.37	13.22	8.85	11.45	11.37	10.36
Total	87.22	109.83	105.24	119.02	154.51	167.88	181.62

TABLE B.—*Load at load centers*

	1956	1958	1965
Albuquerque:			
Plains Electric G. & T. Co-op	29.0	34.0	108.0
Raton Public Service	3.3	3.7	5.6
Total	32.3	37.7	113.6
Gallup: Town of Gallup	7.3	8.7	20.9
Farmington-Aztec area: City of Farmington, Basin Light & Power Co.	5.5	13.9	36.2
Total	45.1	60.3	170.7

Rural electric system, New Mexico

FUTURE LOAD REQUIREMENTS

Year	August kilowatt	December kilowatt	Annual kilowatt-hour
1958	34,000	30,000	190,000,000
1959	43,000	38,000	246,000,000
1960	52,000	46,000	274,000,000
1961	62,000	55,000	326,000,000
1962	71,000	64,000	373,000,000
1963	84,000	75,000	441,000,000
1964	96,000	86,000	505,000,000
1965	108,000	98,000	569,000,000
1966	119,000	107,000	625,000,000
1967	130,000	117,000	681,000,000
1968	140,000	126,000	735,000,000
1975	210,000	189,000	1,111,000,000

GENERATION

Type	Nameplate	Current status	Status with project power available
Thermal	50,000		

Municipal electric systems, New Mexico

FUTURE LOAD REQUIREMENTS

Year	August kilowatt	December kilowatt	Annual kilowatt hour
1958	25,000	26,300	109,248,000
1959	31,000	32,100	128,633,000
1960	36,000	37,400	149,296,000
1961	40,000	42,200	166,326,000
1962	45,000	47,100	185,061,000
1963	50,000	52,500	206,374,000
1964	55,000	57,400	227,738,000
1965	60,000	62,700	248,953,000
1966	65,000	68,000	268,744,000
1967	71,000	73,700	291,862,000
1968	76,000	79,800	313,200,000
1975	113,000	118,100	467,000,000

GENERATION

Type	Nameplate	Current status	Status with project power available
Thermal	45,600		

Senator CHURCH. Senator Hruska is with us this morning. Senator, we want to welcome you to the committee. We understand that Mr. Fraser of Omaha is here as a witness, and that you would like to introduce him to the committee. We are happy to have you and want to welcome you for that purpose.

Senator HRUSKA. Thank you, Mr. Chairman. Representing as I do the only State that lies entirely within the Missouri River Valley, I feel right at home in any hearings which pertain to the problems of the Missouri River Valley and that would be particularly true of the power allocation for the Missouri Basin.

Mr. Fraser, whom I should like to introduce, is counsel for the Omaha Public Power District, which, as he will describe more fully, embraces a territory in the immediate vicinity of the city of Omaha. Mr. Fraser is one of Nebraska's outstanding citizens. In my judgment he is one of the prominent and more capable lawyers of the American Bar Association, one of the many brothers in the law that I have in the State of Nebraska. Some 30 years ago come this June he welcomed me into the practice of law, and was very charitable when he opposed me, and very inordinately helpful when he was on my side of any litigation. I should like to commend him highly. I know the fashion in which he will present his case will more than speak for itself. But I could not pass up this opportunity to speak these words of introduction on his behalf and on behalf of his cause.

Mr. Fraser will you take the witness chair here.

Senator CHURCH. Thank you very much, Senator, and we appreciate your coming here this morning, Mr. Fraser.

STATEMENT OF WILLIAM FRASER, COUNSEL, OMAHA PUBLIC POWER DISTRICT

Mr. FRASER. I am so flabbergasted at the introduction that I think I have lost the power of speech.

Senator CHURCH. Mr. Fraser, I note from the agenda here that Mr. Lynn Monroe is here.

Mr. FRASER. Yes.

Senator CHURCH. Would it be convenient for him to come to the table to sit with you so that we can hear from both of you jointly.

Mr. FRASER. Yes.

Senator CHURCH. Mr. Monroe, will you come forward? We want to welcome you this morning, too. Will you have a seat there by Mr. Fraser.

Mr. FRASER. Mr. Chairman, we do not have a prepared statement, as I am going to ask leave to place in the record a copy of a letter written on January 28, 1959, to Hon. Fred A. Seaton, Secretary of the Interior, a copy of which was transmitted also to Assistant Secretary Aandahl.

Senator CHURCH. The letter may be admitted at this point in the record.

(The letter referred to follows:)

FRASER, WENSTRAND, STRYKER, MARSHALL & VEACH,
Omaha, Nebr., January 28, 1959.

Hon. FRED A. SEATON,
Secretary of the Interior, Washington, D.C.

DEAR MR. SECRETARY: I am writing you on behalf of Omaha Public Power District with reference to the study of possible disposition of Missouri River Basin project firm power, eastern division, eastern area.

I am enclosing copy of summary of Omaha Public Power District's negotiations with the Bureau of Reclamation, commencing on June 15, 1948, through November 21, 1958, a period of more than 10 years. You will note from this summary that OPPD first asked for consideration and allocation of power from the Bureau of Reclamation on June 15, 1948. From that time until December 17, 1952, nine separate contracts were written and discussed. An agreement was finally reached with the then personnel of the Bureau of Reclamation, and on January 15, 1953, the board of directors of OPPD authorized the signing of the contract.

As heretofore pointed out, this contract contemplated the supplying of firm power and the construction by the Bureau of Reclamation of a transmission line for delivery of same to Omaha Public Power District.

On September 25, 1953, after a change of administration, that contract was returned to OPPD unsigned by the Bureau.

On December 8, 1953, the district made a new application for 40,000 kilowatts of firm power for delivery at Sioux City, Iowa.

On February 14, 1954, this application was denied because of oversubscription of available power, and no transmission facilities.

Following this, on April 5, 1954, representatives of the district met with Mr. Aandahl in Sioux Falls, S. Dak., and he explained the criteria used in making applications, and stated that OPPD was eliminated on the basis that it had adequate efficient generation.

Thereafter request was made of the Bureau for reconsideration, and on June 30, 1954, the Bureau again denied the application.

On November 16, 1956, OPPD applied for 75,000 to 100,000 kilowatts of summer firm power.

As a result of this application many conferences and a great deal of correspondence ensued, including, among other things, a conference between Mr. C. W. Minard of the power district and the writer with you on October 28, 1957; a conference most of October 29, 1957, between you and Mr. C. F. Moulton of the power district and myself with Bureau officials, and a conference on October 30, 1957, of OPPD representatives with Mr. Aandahl and other representatives of the Bureau.

Thereafter, on February 24, 1958, a conference was had with you, Mr. C. Petrus Peterson (at that time a special representative in the Bureau), Mr. C. W. Minard of OPPD, Mr. M. M. Meyers of the board of directors of OPPD, and the writer.

At these conferences with the Bureau the principal matter under discussion was the application for summer firm power, but we were assured that an allocation of year-round firm power would be made before long, and that OPPD, by reason of its previous applications, would be given primary consideration.

On March 18, 1958, a contract was entered into between Omaha Public Power District and United States of America, through the regional director of region 7, Bureau of Reclamation, for seasonal firm power in the amount of 30,000 kilowatts during the year 1961 and 50,000 kilowatts thereafter.

Promptly thereafter, Omaha Public Power District, on April 3, 1958, made application for 50,000 kilowatts of firm power for delivery in 1962 and 1963.

On November 14, 1958, OPPD was furnished with a proposed disposition of Missouri River Basin project firm power, containing a breakdown of previous power allotments, the customer applications for power in 1963, the estimated requirements of the customer, adjustments by the Bureau of Reclamation, and the amount of Bureau power needed to meet customer adjusted load. Page 10 of this study deals with Nebraska applicants, and an examination of same indicates that all applicants, with the exception of Omaha Public Power District, were to be supplied firm power pursuant to the adjusted load determinations of the Bureau.

Among other things, there was an allotment to the University of Nebraska of 7,200 kilowatts, although it was applying for only 1,750 kilowatts. There was a proposed allotment to Offutt Air Force Base of 13,600 kilowatts, although there is no transmission line from the Bureau to Offutt, and the only reasonable way to deliver same would be by said power being wheeled by OPPD.

The reason assigned for no allocation of power to OPPD was "for efficient generation." In other words, a conclusion that OPPD had sufficient generation without basin power.

On December 1, 1958, Mr. C. F. Moulton of the district addressed a communication to the Honorable Fred G. Aandahl reviewing the situation with reference to the application of April 3, 1958, and particularly pointing out that at least four of the district's generating units listed in the study of possible disposition of basin power should not be listed as "efficient units," and giving the reasons therefor.

Mr. Moulton further pointed out that the study proposed allocations that in all probability would not be required in their full amounts, and also called attention to the allocation to Offutt Air Force Base. He further took exception to the making of allocations on the basis of winter peaks.

Mr. Moulton further pointed out that Omaha Public Power District had on order a 125,000-kilowatt unit for 1962 or 1963, which had cancellation privileges which could be exercised if a firm power allotment was received from the Bureau of Reclamation, and that if an allotment of 50,000 kilowatts was made for 1963 OPPD could defer the 125,000-kilowatt unit until 1964 and save fixed charges of $1,250,000.

He further pointed out that OPPD, after making the contract for seasonal power, had also entered into a contract with Iowa Public Service Co. which obligates OPPD to construct at a cost of approximately $3½ million a transmission line from Omaha to a point near Salix, Iowa, and he stated that this line is to be built for the primary purpose of transmitting seasonal firm power from the Bureau of Reclamation, but that it would also be used for other benefits which accrue from interconnected operations. He further stated, "We also believe we were encouraged by Bureau of Reclamation officials to expect additional benefits which might result from purchases of firm power from the Bureau."

The letter concluded by asking the Bureau to reconsider its application and requested a conference with Mr. Aandahl at the Sioux Falls meeting set for December 8 through December 11, 1958.

A copy of the letter of December 1, 1958, with a summary of negotiations between the district and the Bureau of Reclamation attached thereto, and also a study of "Load and Capability Forecast" of Omaha Public Power District, is herewith enclosed.

A hearing was had in Sioux Falls, S. Dak., on December 9 through December 11, 1958, with Mr. Aandahl in charge of same, and attended by Mr. C. F. Moulton, assistant general manager, and Mr. Lynn A. Monroe, of Omaha Public Power District. Mr. Moulton had a conference with Mr. Aandahl.

At that hearing it developed that in all probability there would not be any additional allocations of basin project firm power, so that if Omaha Public Power District is not given favorable consideration at the present time it will be obliged to go forward with its project for the 125,000-kilowatt unit.

There is also enclosed herewith copy of "Study of Possible Disposition of Missouri River Basin Project Firm Power," which is referred to as a draft of November 14, 1958, but at times in the correspondence is referred to as a memorandum issued November 21, 1958, signed by Fred G. Walter, Jr., regional director.

Omaha Public Power District has attempted to be cooperative with Offutt Air Force Base, having recently agreed upon a contract for the taking over by the Government of its facilities in the Wherry housing project and to furnish electric power in the future on a wholesale basis to Capehart housing project.

Omaha Public Power District supplies approximately 40 percent of all electric power and energy generated in the State of Nebraska to Omaha and 38 villages and towns, and considerable power to rural customers in 9 different counties.

It would certainly seem that over a 10-year period, Omaha Public Power District should be allocated some firm year-round power.

Who are the real owners of Omaha Public Power District? The answer is, the people in the district it serves, approximately 400,000 in number.

It is an efficient, well operated organization, with a very high-class board of directors, consisting of J. M. Harding, who is president; William F. Kunold, first vice president; Theodore W. Metcalfe, second vice president; Dr. B. H. Baer, secretary; Melvin Bekins; M. M. Meyers, and Richard Sievers.

Generally speaking, the general manager and the supervisory employees have grown up in the organization, having been employees of Nebraska Power Co., and some as far back as Omaha Electric Light & Power Co.

The district continually makes studies, trying to anticipate the needs of the communities it serves, and plans accordingly.

It is true that at any given time it does have sufficient generating capacity to serve the needs of the territory it serves. However, it is essential that it plan in advance. A unit to produce electricity cannot be installed in a short period of time. Orders must be placed and contracts made several years in advance.

It must secure generating capacity that it anticipates will be needed, either by the expenditure of large capital sums, or seek such power from the Missouri River Basin project.

The Omaha Public Power District should not be penalized on account of the fact that it does have good management and endeavors to anticipate future needs. It is entitled to and should be allotted a substantial amount of power in the pending allocation of Bureau power.

Since dictating the above there has come to my attention an advertisement appearing in the Omaha World-Herald of January 28, 1959, copy of which I enclose. This gives the facts relative to the cost of electricity in Omaha (and the rates are the same in the other communities the district serves). It will be noted that the 400,000 people being served have the benefit of electric costs far below the national average.

Respectfully submitted.

W. C. FRASER

(For Fraser, Wenstrand, Stryker, Marshall & Veach,
Attorneys for Omaha Public Power District).

DECEMBER 8, 1958.

OPPD NEGOTIATIONS WITH BUREAU OF RECLAMATION

Comments: The Omaha Public Power District is a preference customer as defined by the laws of the United States, and is within the marketing area of the eastern division of the Missouri Basin main-stem plants.

June 15, 1948: First correspondence asking for consideration of allocation of power from the Bureau of Reclamation—25,000 to 50,000 kilowatts.

January 1, 1949: First formal application for firm power was filed—50,000 kilowatts.

March 5, 1951: First draft of contract submitted by the Bureau to OPPD.

March 5, 1951–December 17, 1952: Nine separate contracts were written and discussed.

December 27, 1952: Power committee of OPPD approved the ninth contract.

January 15, 1953: Board of directors of OPPD authorized signing contract.

September 25, 1953: Contract returned to OPPD unsigned by the Bureau.

December 8, 1953: District made new application for 40,000 kilowatts of firm power, for delivery at Sioux City, Iowa.

February 14, 1954: Application denied because of oversubscription of available power and no transmission facilities.

April 5, 1954: Meeting in Sioux Falls. Mr. Aandahl explained criteria used in making allocations. OPPD eliminated on basis of adequate efficient generation.

April 16, 1954: OPPD requested the Bureau to reconsider.

June 30, 1954: Bureau again denied application.

November 16, 1956: OPPD applied for 75,000 to 100,000 kilowatts of summer firm power.

March 1958: Contract consummated with Bureau for summer firm power. Also, contract concluded with Iowa Public Service Co. for construction of 161-kilovolt line to Sioux City.

April 3, 1958: OPPD applied for 50,000 kilowatts of firm power for deliveries in 1962 and 1963.

November 21, 1958: Application denied on basis the district had adequate efficient generation.

DECEMBER 1, 1958.

Hon. FRED G. AANDAHL,
Assistant Secretary, Department of Interior,
Washington, D.C.

DEAR MR. AANDAHL: On April 3, 1958, the Omaha Public Power District applied to the Bureau of Reclamation for an allotment of firm power, 30,000 kilowatts to be delivered in 1962 and increased to 50,000 kilowatts in 1965. We have understood that the Omaha Public Power District, a political subdivision of the State of Nebraska, would qualify as a preference customer under the laws of the United States.

A memorandum dated November 21, 1958, issued by the Bureau of Reclamation and signed by Mr. Fred G. Walter, Jr., regional director, indicates that the application of the Omaha Public Power District would be denied on the basis that the district would have efficient generating capacity in sufficient quantities to cover its winter peaks for the year 1963.

A previous firm power application of the district was denied during the April 1954 allotment meetings at Sioux Falls, S. Dak., also on the basis that the district had adequate efficient generation to meet its requirements. During the meetings at Sioux Falls, the writer discussed with you the application of the Omaha district, and I believe that you indicated at that time that, when additional power became available from Oahe, Fort Peck, and Garrison, the Omaha district would be given high priority in regard to consideration for a firm power allotment. We feel now, as we felt at that time, that the district should receive a firm power allotment and submit the following reasons:

1. The Omaha Public Power District is a preference customer.

2. At least four of the district's generating units, as listed in the memorandum of November 21, should not be listed as "efficient units." One unit of 25,000-kilowatt capacity is a 325-pound, 750° F. machine built in 1930. Three units, totaling 30,000-kilowatt capacity, are back-pressure type units and are very inefficient except when being used to supply exhaust steam to industrial steam customers.

3. In studying the tabulations attached to the November 21 memorandum, it seems to me that there is a strong possibility that many of the allocations will not be required in their full amounts. For example, for reasons which they must have deemed sound, the University of Nebraska, with an estimated 1963–64 winter peak load of 7,200 kilowatts, applied for 1,750 kilowatts in 1963. The allotment indicated is 6,340 kilowatts. Just how many other similar situations exist or will exist is not immediately evident. In the case of the Offutt Air Force Base, 13,600 kilowatts were allocated, presumably on the assumption that Offutt Air Force Base would be able to negotiate with the Omaha Public Power District for wheeling of that allotment and future allotments.

4. Inasmuch as the Bureau has elected to make allocations on the basis of winter peaks we feel that we must take exception to this approach. We believe it would have been more realistic and more fair to have considered each applicant on the basis of such applicant's annual peak. To do otherwise, we believe, is discriminatory and not in the best interests of the Bureau or the applicants.

5. The Omaha Public Power District's order for a 125,000-kilowatt unit for 1962 or 1963 includes cancellation privileges which could be exercised if a firm power allotment is received from the Bureau of Reclamation. As shown by the attached load and capability forecast, an allotment of 50,000 kilowatts of firm power in 1963 would enable the Omaha Public Power District to defer the unit until 1964. This would result in a saving in fixed charges of $1,250,000 which, we believe, fully conforms to the Bureau policy of maintaining low electric service costs for residents of the Missouri Basin.

6. The district has entered into contracts with the United States and with the Iowa Public Service Co., which obligates the district to construct, at a cost of approximately $3.5 million, a transmission line from Omaha to a point near Salix, Iowa. This line is to be built for the primary purpose of transmitting seasonal firm power from the Bureau of Reclamation system to Omaha. We expect to use the line for the other benefits which accrue from interconnected operation. We also believe we were encouraged by Bureau of Reclamation officials to expect additional benefits which might result from purchases of firm power from the Bureau.

Attached is a brief summary of the previous negotiations between OPPD and the Bureau in the various attempts to obtain a firm power contract. Also included is a tabulation showing the summer and winter peaks as estimated by the district, the net capability of the efficient generation of the district, the required reserves and the surplus or deficiency of power to carry the district's peaks.

The Omaha Public Power District at this time again requests that the Bureau of Reclamation reconsider its application. We feel that because of the reasons mentioned above, the Omaha district should share in the allocations of firm power.

I would also like to take this opportunity to ask for a short conference with you, during the Sioux Falls meetings, December 9 through 11, inclusive, to further discuss this matter. I will be at the Cataract Hotel in Sioux Falls late the afternoon of December 8, and I would be pleased to meet with you whenever you might be available throughout the balance of the meeting dates.

Sincerely yours,

C. F. MOULTON,
Assistant General Manager.

SUMMARY OF OMAHA PUBLIC POWER DISTRICT-BUREAU OF RECLAMATION NEGOTIATIONS, AND OMAHA PUBLIC POWER DISTRICT LOAD AND CAPABILITY DATA

On June 15, 1948, the Omaha Public Power District, in a letter to Mr. Julius A. Krug, Secretary of the Interior, applied to the Bureau of Reclamation for the purchase of power and energy to be used in the Omaha area. A formal application stating amounts was filed with the Bureau on January 1, 1949.

During the next few years, nine separate drafts of a contract were written by one party or the other, and submitted for approval. The ninth draft was agreeable to both the Bureau and the Omaha district, and subsequently was signed by the board of directors of Omaha Public Power District on January 15, 1953. However, the contract, when submitted to the Department of the Interior, was not approved, as we understand, because of new policies of the Interior Department which were not compatible with the policies of the previous staff. Subsequently, the contract was returned to the Omaha district and applications were again taken for firm power allocations.

On December 8, 1953, the district applied for 40,000 kilowatts of firm power, with deliveries beginning in 1956 at Sioux City, Iowa. In this application the district agreed to build transmission facilities to Sioux City in order to interconnect with the Bureau's facilities at that point.

On February 14, 1954, in a communication from the Department of the Interior, the application of the Omaha Public Power District was denied on the basis that the Omaha district had adequate efficient generation to meet its loads.

In a conference with Mr. Aandahl during the April 1954 meeting at Sioux Falls, S. Dak., Mr. Aandahl recommended to the representatives of Omaha Public Power District that Omaha proceed immediately to install steam-generating capacity to meet their further requirements. It was indicated at that time that the Omaha district would be in a good position to receive some firm power from the construction of the Oahe project and the completion of Fort Peck and Garrison projects.

The Omaha district, on April 16, 1954, contacted Mr. Aandahl and requested that the application of the Omaha district be reconsidered. On June 30, 1954, a communication from the Department of the Interior again turned down the application on the basis that no means of serving the Omaha district existed at that time or was reasonably potential.

During the latter part of 1956, the Bureau of Reclamation indicated that some summer firm power would be available in the area and the Omaha district applied for the purchase of 75,000 to 100,000 kilowatts of summer firm power, with deliveries beginning May 1, 1961. Discussions and negotiations continued through the early part of 1957 and a draft of the contract was submitted to the Omaha district by the Bureau for deliveries up to 50 megawatts of summer firm power service. The negotiations continued with the Bureau throughout the year, and joint negotiations were established with the Iowa Public Service Co. to build a transmission line to connect with the Bureau's substation at Sioux City, Iowa. Final negotiations were concluded and a contract was signed in March 1958 with the Bureau of Reclamation for the deliveries of summer firm power to begin with the navigation season of 1961. Simultaneously contracts were negotiated by the Bureau and Omaha Public Power District with the Iowa Public Service Co. for the construction and operation of the necessary transmission facilities in Iowa.

On August 5, 1957, the Omaha district received an announcement of additional firm power from the Missouri River project, along with forms to be used in making application for additional power. The district applied for 50,000 kilowatts of firm power, with initial deliveries to be 30,000 kilowatts in 1962 and the balance of 20,000 kilowatts to be delivered in 1965.

It is our understanding from the memorandum dated November 21, 1958, that the Omaha district is again denied an allocation of year-around firm power on the basis of the district's ability to meet its winter loads with adequate efficient generation in the year 1963. By letter herewith we are requesting reconsideration of our application and are submitting reasons to support our request.

DECEMBER 1, 1958.

Omaha Public Power District, load and capability forecast

[All figures in megawatts]

	1960		1961		1962		1963	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Net capabilities	506	506	506	506	506	506	506	506
Summer firm			30		50		50	
Total	506	506	536	506	556	506	556	506
Estimated peak loads	414	310	455	335	500	360	555	380
Surplus	92	196	81	171	56	146	1	126
Required reserve 12 percent	50	37	51	40	54	43	55	46
Excess	42	159	30	131	2	103	54	80

NEBRASKA

Study of possible disposition of Missouri River Basin project firm power, eastern division, eastern area, (draft of Nov. 14, 1958)

[In kilowatts]

Applicant	1954 power allotment	1954 allotment not under contract	Customer application for power, 1963	1963–64 winter peak load			Bureau power supply will meet 88 percent of column 6 totals	Description of adjustments
				Estimated by customs [1]	Adjustments by Bureau of Reclamation	Bureau power needed to meet customer adjusted load		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
NEBRASKA								
Nebraska Public Power System and class I customers:								
Nebraska Public Power System	98,200							
Beatrice	1,800							
Subtotal	100,000	0	150,000	412,000	−269,000	143,000		For efficient generation.
Class II customers:								
Auburn	1,100	0	3,300	3,786	0	3,786		
Blair	1,200	1,200	3,030	2,900	0	2,900		
Broken Bow	1,200	1,200	3,000	2,700	0	2,700		
Curtis	0	0	540	640	0	640		
DeWitt	300	0	530	580	0	580		
Fairbury [2]	2,800	0	0					
Fremont	6,000	6,000	10,000	22,500	−14,000	8,500		Do.
Grand Island	0	0	11,500	24,000	−12,500	11,500		Do.
Hastings	0	0	12,500	23,000	−15,500	7,500		Do.
Nebraska City	0	0	9,140	9,140	−700	8,440		For duplication of load in Nebraska Public Power System load estimate.
Pender [2]	500	500	0					
Schuyler [2]	1,200	1,200	0					
Spalding	0	0	380	380	0	380		
Stuart	0	0	70	300	0	300		
Wakefield [2]	400	400	0					
Wayne	1,200	1,200	2,750	2,250	0	2,250		

West Point	900	0	1,500	1,625	0	1,625		
Winside	0	0	225	225	0	225		
Class II, subtotal	16,800	11,700	58,465	94,026	−42,700	51,326		
Total available for customers in Nebraska Public Power System service area, to be apportioned by planning board	116,800	11,700	208,465	506,026	−311,700	194,326	[3] 175,950	
Other:								
Lincoln Air Force Base	0	0	5,600	5,600	0	5,600	[4] 5,600	
Offutt Air Force Base	0	0	13,600	13,600	0	13,600	[4] 13,600	
Omaha Public Power District	0	0	30,000	380,000	−400,000	0	0	For efficient generation.
University of Nebraska	0	0	1,750	7,200	0	7,200	6,340	
Other, subtotal	0	0	50,950	406,400	−400,000	26,400	25,540	
Nebraska State total	116,800	11,700	259,415	912,426	−711,700	220,726	201,490	

[1] Customer's estimated load is subject to review prior to final allocation of power.
[2] Did not apply for power in addition to 1954 allotment.
[3] Includes 4,900 kilowatts of 1954 allotments to 4 customers not reapplying.
[4] Federal establishments assigned 100 percent of 1963 loads.

SUPPLEMENTAL TABULATION

Detail relating to efficient generation

NEBRASKA

[In kilowatts]

	Efficient units
City of Hastings:	
City's generating plant	3,500
Do	6,000
Do	6,000
Do	16,500
Total	32,000
Less largest unit for reserve	16,500
Assured capacity	15,500
Omaha Public Power District:	
North Omaha plant	75,000
Do	100,000
Do	100,000
Do	125,000
South Omaha plant	15,000
Do	5,000
Jones St. plant	40,000
Do	30,000
Do	10,000
Do	25,000
Total	525,000
Less largest unit for reserve	125,000
Assured capacity	400,000
Nebraska Public Power System:	
Hydro plant totals:	
Johnson No. 1	18,000
Johnson No. 2	16,000
Jeffrey	16,000
North Platte	24,000
Steam plants:	
Kramer	30,000
Do	30,000
Do	30,000
K St	15,000
Canaday	100,000
Sheldon	90,000
Total	369,000
Less largest unit for reserve	100,000
Assured capacity	269,000

Mr. FRASER. Continuing a little further relative to the statement made by Senator Hruska, the Omaha Public Power District is a preference customer. It serves the city of Omaha and about 30,000 farmers, supplying power in some 9 counties in Nebraska. It serves approximately 425,000 people, one-third of the population of the State of Nebraska. It develops and transmits to users 40 percent, approximately, of all power generated or used in the State of Nebraska.

Whom do we serve? Omaha is the largest livestock market in the world. The livestock and packing industry itself has approximately 15,000 employees who are customers of Omaha Public Power District, and who constitute the average citizen. In addition to that, Omaha

is a great food-processing city, and thousands of employees are engaged in food processing. It is one of the outstanding railroad centers of the United States, being served by 13 mainline railroads, and there are thousands of railroad employees served by Nebraska Power Co.

Omaha has become quite a center for the insurance industry. We have a great many large insurance companies. You have all heard of Mutual of Omaha many times. You can go by their establishment any day, at quitting time, and 3,000 employees pour out of those buildings.

Generally speaking, that is the type of customer that we have in addition to industry and other things.

We have approximately 125,000 customers on the line. For instance, a family that might average 3 and 4 people is counted as one customer.

Our greatest peak demand is in the summertime for two reasons. Air conditioning, which has increased tremendously in recent years, and the demand for refrigeration in the packing industry and these food-processing places. So contrary to a lot of the testimony that I have heard yesterday, we reach a peak in the summertime.

We commenced in 1948 to seek to obtain Missouri River Basin power. We have not yet received one kilowatt of basin power. The first application was filed on January 1, 1949, for 50,000 kilowatts. Between that time and December 1952, with the then personnel of the Bureau of Reclamation, we negotiated and negotiated and finally a ninth draft of a contract was agreed on, approved and authorized to be executed by our board of directors and was executed in December of 1952. It contemplated the Bureau, or the U.S. Government, building a transmission line from Sioux City to deliver power to us at Omaha, or in the vicinity of Omaha.

In September 1953 that contract or proposed contract was returned to us by the then personnel of the Bureau of Reclamation, stating that a change of policy had occurred, and they would not build any transmission lines.

So that came to nothing.

On December 8, 1953, we made a new application for 40,000 kilowatts of firm power for delivery at Sioux City, Iowa. On February 14 of 1954, that application was denied because of oversubscription of available power and no transmission facilities.

On April 5, 1954, we attended the meeting at Sioux Falls. Mr. Aandahl explained the criteria used in making allocations and Omaha Public Power District was eliminated on the basis that we had adequate, efficient generation. We do have an efficient management, and as all the witnesses have testified, you can't go into the market and buy a plant for the production of electricity overnight. Orders have to be placed several years in advance for a unit of any particular size such as we use in Omaha.

Our board of directors are businessmen and they do plan ahead, and they are anticipating the needs of these 425,000 customers, and our growing population and our increasing industry in Nebraska and vicinity. We asked reconsideration of that, but in June 1954, our application was again denied.

In November 1956, we made application for 75,000 to 100,000 of summer firm power. Finally in March of 1958, a contract was consummated with the Bureau for summer firm power, which, of course, is a benefit to the Bureau as well as to us, because it takes the power at a time when they do not have the demand for it, and it helps us out by helping to fill our needs in our peak period.

Senator HRUSKA. Mr. Fraser, what was the amount of the allocation at that time?

Mr. FRASER. The allocation of that is 30,000 kilowatts commencing in 1961, and increasing to 50,000 thereafter. Incidentally, that contract has a provision giving the Bureau a right to cancel on 3 years' notice, so it could be canceled out in 1966.

Furthermore, we have to build that transmission line, and we are taking steps now preparatory to building a transmission line from Omaha to Salix, Iowa, and there we have a contract where the Iowa Public Service will build the line from Salix on to a point near Sioux City where the Bureau power will be transmitted. That contract is of great benefit to the Bureau because of interconnections that we have, because of interchange provisions in the contract, and it contains provisions for us selling power to the Bureau during the summertime when it requires power, contingent upon us having it available.

We have never had an allocation of firm power. We are going forward now with a proposed contract for a new unit of 125,000 capacity kilowatts. But under the order placed for that, we have a privilege of delaying for a year or 2 years, if we succeed in getting any of the firm power that we have been asking the district for since 1948.

Just prior to the Sioux Falls meeting, we received a proposed analysis of the distribution of power to be made in all of the States and again when we looked down through that proposed allocation we found Omaha Public Power District coming up with zero. The reason assigned was that we had adequate, efficient facilities to create our own power. We since explained to Governor Aandahl and other members of the Bureau that we had the privilege of delaying at least a year or 2 years the orders for the turbine and boiler of the 125,000 unit if we got some firm power from the Bureau which would save us anywhere from $1 million to $2 million in carrying charges on the investment that we would have to make.

We are informed, under the second study made following the Sioux Falls meeting, that Omaha, under the formula now being considered, will receive approximately 25,000 kilowatts. If we get that 25,000 kilowatts, we then for the first time will have some Bureau power, and it will equal 6¼ percent of our needs. When we put in our extra unit, based on the 25,000 kilowatts of power, then we will have 5 percent of our needs.

I only say that to draw comparisons with people I hear complaining here who are getting 85 percent of their needs. We have never had 1 percent. We now have apparently a possibility of getting somewhere from 5 to 6¼ percent.

We have 6,000 farmer customers, not too much for irrigation, but quite a little, and developing for irrigation and other purposes.

I have covered the matter in a general way. We think, as a preference customer of the same class and same standing as these other

people, that over a 10-year period Omaha Public Power District is entitled to power.

Senator Moss. How do you generate your power now? Is it all thermal units?

Mr. FRASER. Yes. We had, generally speaking, what we called Jones Street stations on the Missouri River and in recent years we have gone to North Omaha on the Missouri River, and we have two completed units, one of 75,000 and one of 100,000, and a third of 100,000 which will be finished and producing in May of this year. Those are in addition to the 125,000 that I have told about our study for future years. Of course, if every time we are to be confronted with the statement: you have plenty of units and you have money and you are ordering more units and you just don't need any basin power—of course that is true of everybody. If everybody just bought units, nobody would ever need basin power.

Senator Moss. Is Sioux Falls the closest dam available for Bureau power for your district?

Mr. MONROE. Fort Randall and Gavins Point, in the river between Nebraska and South Dakota just above Sioux City.

Senator Moss. Where does that power go?

Mr. MONROE. It goes into the Bureau's system. As to where a kilowatt of power goes that is generated, it is pretty hard to determine.

Senator Moss. But none of it comes into your Omaha district?

Mr. MONROE. Not Omaha. The Nebraska Public Power System, which serves the eastern two-thirds of the State with the exception of Omaha and the surrounding territory, receives power from the Bureau.

Senator HRUSKA. Mr. Fraser, what is the status of that transmission line that you are required to build under this allocation of summer firm power? Is that under construction?

Mr. FRASER. We are now proceeding to acquire the easements that are required for the erection of that transmission line. We are committed with a firm contract with the Iowa Service Co. to build it. They pay their part of it from Salix, Iowa, to Sioux City, and we pay from Omaha up to Salix.

Senator HRUSKA. And it will be the same line which will service the firm power which you hope to get under the most recent action of the Bureau of Reclamation?

Mr. FRASER. That is right, except for the interconnections that exist between all these systems. I think everybody in the business recognizes that power does not always travel over certain lines.

Senator HRUSKA. Some of it may come through the connections of the Nebraska Public Power Commission; is that right?

Mr. FRASER. That is right. That is a thing that has been discussed at considerable length yesterday, and there ought to be a lot of planning in that direction.

Senator HRUSKA. That is all, Mr. Chairman.

Senator Moss. Thank you very much, Mr. Fraser, and Mr. Monroe. Your presentation has been very helpful.

The next witness will be W. P. Venable of the Consumers Public Power District. Senator Hruska, do you want to introduce this constituent?

36683—59——11

Senator HRUSKA. I would. I would like to introduce Mr. Venable and Mr. DeBoer, who is the executive director of the Nebraska Public Power System. Both of them are well known here in Washington, and with the Bureau, and they are recognized as authorities in power problems in the Middle West there, and with particular reference to problems having to do with the big stem dams on the Missouri River. It is a great pleasure for me to welcome both you gentlemen, Mr. Venable and Mr. DeBoer this morning, preparatory to your testimony here before this committee.

STATEMENT OF W. P. VENABLE, CONSUMERS PUBLIC POWER DISTRICT, COLUMBUS, NEBR.

Mr. VENABLE. Thank you, Senator, and Mr. Chairman. I would like permission to read a short statement which finally I got completed early this morning. I was unable to get it typed to hand to you.

Senator MOSS. You may proceed.

Mr. VENABLE. My name is W. P. Venable, superintendent of power supply, Consumers Public Power District of Columbus, Nebr. The Consumers Public Power District is a public power district and a subdivision of the State of Nebraska, and therefore a preference customer.

Consumers' eastern system serves 321 towns with a population of over 295,000, and customers in excess of 100,000. Consumers' load is approximately 50 percent of the winter peak of the Nebraska Public Power System. Therefore, Consumers is vitally interested in the proposed allocation of power by the U.S. Bureau of Reclamation from plants on the main stem of the Missouri River.

Consumers, through its purchase power rate, is paying approximately 50 percent of the NPPS power cost; the rural systems and municipal customers served by NPPS pay the balance of the cost. The suggested USBR allocation presented at Sioux Falls, S. Dak., in December 1958, and again discussed in Washington with the Assistant Secretary of Interior this week, are in our opinion inequitable, and do not give anybody the same consideration as given the upper river States. This arises because the formula adopted by the Bureau of Reclamation takes into account generating capacity already constructed by the preference customers. The result is that Nebraska is being severely penalized for having installed plant capacity to meet the major part of its loads while waiting for the completion of the construction of Missouri River plants.

We do not think it is fair to penalize those customers who have stood on their own feet and made large investments for their own use. If anything, we think they should receive more benefits, rather than fewer, if complete equality between preference customers in the basin is to be achieved.

The upper river States' preference customers, as indicated by the suggested allocation, would receive more than 75 percent, and in many cases they are receiving up to 88 percent of their estimated load requirements. Isn't it reasonable to expect that all customers of the basin be required to carry a portion of their power costs either in powerplant capacity or through power purchases?

We realize the very difficult problem with which the Assistant Secretary is confronted in trying to make a fair allocation among States and among preference customers. We wonder about the authority to cut down the allotment to a customer merely because that customer has been farsighted enough to provide for its own needs. We do not believe the Bureau has full responsibility for the electric needs of the basin and, if not, then the power available should be prorated over every customer's needs, whatever his generative capacity may be.

It has been suggested by representatives of the upper river States who appeared before this committee on Friday, February 13, 1959, that a new and complete study be made of the water use of the river. We know at the present time from the report of the Missouri Basin Operating Committee what is being done with the water through 1958 and 1959.

To my knowledge there has not been a recent report covering proposed water use after all Missouri dams are in operation. Therefore, Consumers concurs that a comprehensive new study should be made covering water uses for (1) navigation; (2) power production; (3) diversion for irrigation. The report also should cover power available for sale to customers to meet the winter peaks and to meet the summer peaks, and the power to be used for irrigation pumping.

Further, an economic study should be made of the integration of Missouri hydroplants with existing and proposed thermal generation utilities in the area for maximum integration of all facilities, both public and private.

In closing, it is respectfully requested that we be given an opportunity to appear before the committee on March 5 if Consumers feels that additional data should be sumitted to clarify our position relative to the allocation of Bureau power.

Senator Moss. I am sure you will be welcome to appear before the committee in the further hearings that are scheduled for the 5th of March.

One thing that occurs to me is that if the Bureau made a pro rata allocation to all the preference customers, is it possible that some of these preference customers would have more power than they could utilize, and they would have to retire some of their generating units?

Mr. VENABLE. The method that has been proposed is this: They have allocated practically all the requirements of certain customers. Nebraska has not asked for that. Nebraska is only asking for some 23 percent. We recognize we have capacity. Our use in Nebraska on its preference loads is equal to the entire State loads of South and North Dakota combined. That is private power and all. We have confined our request to our needs because we have assumed the major responsibility for our customers.

Senator Moss. You would not really want a pro rata allocation. If we assume that the capacity of the Bureau power would give everybody 70 percent of his needs, you would not want as much as 70 percent.

Mr. VENABLE. We have only asked for roughly 23 percent.

Senator Moss. But you feel you are entitled to the 23 percent since others are asking up to 85 percent?

Mr. VENABLE. They have been allocated 75 to 88 percent of their capacity. In other words, the Bureau has assumed practically a full utility responsibility for those customers. We are complaining that we should be considered on a reasonable basis.

Senator MOSS. I see.

Senator HRUSKA. What are you now receiving from the big stem dams?

Mr. VENABLE. I think Mr. DeBoer will cover that, but we are receiving 100,000 firm and have a contract for 50,000 of summer firm. Mr. DeBoer will cover that.

Senator HRUSKA. I will defer the questions in that direction. Thank you.

Senator MOSS. Thank you very much, Mr. Venable. We appreciate your appearance and testimony here.

Mr. VENABLE. Thank you.

Senator MOSS. Mr. Dewey J. DeBoer, executive director of the Nebraska Public Power System, is the next witness. Senator Hruska has introduced you, Mr. DeBoer. Will you take the witness chair, please.

STATEMENT OF DEWEY J. DeBOER, EXECUTIVE DIRECTOR, NEBRASKA PUBLIC POWER SYSTEM, COLUMBUS, NEBR.

Mr. DEBOER. Thank you, Mr. Chairman and Senator Hruska. My name is D. J. DeBoer. I am executive director of Nebraska Public Power System, with headquarters at Columbus, Nebr.

The Nebraska Public Power System is a wholesale generation and transmission agency jointly owned and operated by the Platte Valley Public Power & Irrigation at North Platte, Nebr., and the Loup River Public Power District of Columbus, Nebr. In 1954 the Nebraska Public Power System entered into an interconnection contract with the Bureau of Reclamation, covering the sale and purchase of firm power and subsequently amended to cover the sale and purchase of so-called seasonal summer power, and having other provisions with respect to standby and emergency service, and the user provisions of an interconnection contract.

For the purposes of my later discussion, I will refer to what are known as class I and class II customers. These customers are defined in this contract. The class I customers are those preference customers who are wholly dependent upon the Nebraska Public Power System for their power supply. The class II customers, as defined in the contract, are those customers, mostly municipalities, who are independent of the Nebraska Public Power System for their power supply. I want to make sure that distinction is made.

The Nebraska Public Power System of and in itself does not utilize Bureau power. We are strictly the agent.

Senator HRUSKA. Mr. DeBoer, would you mind an interruption on that point before you get too far away from class I and class II? With reference to class II, does it mean that the customers are totally independent of the Nebraska Power System, or just partially so?

Mr. DEBOER. It means that they are totally independent as far as their normal supply is concerned, with the exception that if and when they contract with the Bureau for Bureau power, then they will connect to our system and we are obligated to wheel power to them. Does that answer your question?

Senator HRUSKA. But as of now what is their status? They are not receiving any supply from you?

Mr. DEBOER. That is correct. The Nebraska Public Power System, as I said, is merely the agent for class I customers. We will talk here in this discussion in large amounts of power. I want to make it clear that the reason we talk in large amounts is because we have a large number of customers who rely upon us to supply them their power. For example, we serve 27 rural public power districts who in the aggregate serve in turn at retail approximately 90,000 farm customers. We serve, as Mr. Venable has said, all of the requirements of the Consumers Public Power District, which district retails and wholesales to municipalities, cities, towns, and rural customers totaling approximately 325 cities and towns, a large number of farm customers, and in addition some of these rural districts serve some smalltown municipalities and in the aggregate they are serving approximately 110,000 customers at retail. So the Nebraska Public Power System in effect is the agent for over 400 public power systems and municipal power agencies, all of whom are individual preference customers under the law.

As I said a moment ago, these in turn serve well over 200,000 individual retail customers.

The forthcoming reallocation of Missouri Basin power that is now under contract, plus the allocation of new additional power therefore affects approximately 750,000 citizens of Nebraska. In addition to that, I must add there are several preference customers in Nebraska who have actually not applied for Bureau power. These are the ones that have applied.

At this point, Mr. Chairman, I would like permission to put in the record in the interest of saving time a prepared statement, or a speech, if you please, that I made at the 23d annual meeting of the Nebraska Rural Electric Association in Lincoln, Nebr., on February 2, 1959, entitled, "Nebraska's Share of USBR Power." This is a fair summary, I believe, of our position, and it will save time, if you please, to put this in the record.

Senator MOSS. It may be filed with the reporter and be made a part of the record.

(The statement referred to follows:)

NEBRASKA'S SHARE OF USBR POWER

Presented at the 23d annual meeting of the Nebraska Rural Electric Association, Lincoln, Nebr., February 2, 1959, by D. J. DeBoer

Missouri River Basin project power, commonly known as USBR power or Bureau power, is produced in a series of hydroelectric plants on the main stem of the Missouri River in Montana, North Dakota, and South Dakota. At the

present time, four of these plants are in operation with installed capacity as follows:

Plant:	*Installed capacity (kilowatts)*
Fort Peck	85,000
Garrison	240,000
Fort Randall	320,000
Gavins Point	100,000
Total	745,000

Two additional generating units totaling 80,000 kilowatts are under construction at the Fort Peck plant as are two additional units in the Garrison plant totaling 160,000 kilowatts. The Oahe plant is currently under construction and will have an installed capacity of 425,000 kilowatts, and the last plant in the series is the Big Bend plant, the final installed capacity of which has not yet been determined. Depending upon the ultimate capacity of the Big Bend plant, it is anticipated that the total installed capacity in the main stem plants will be somewhere between 1,600,000 kilowatts and 1,800,000 kilowatts.

Of the presently available generating capacity, some 555,000 kilowatts of year-round firm power was allotted to preference customers in the eastern Missouri Basin in 1954. All but about 35,000 kilowatts of these allotments are now under contract.

In November 1958, the Bureau of Reclamation publicly announced the proposed further allocation of some 435,000 kilowatts of additional firm power pursuant to applications received from preference customers earlier in the year. This new amount added to the 1954 allocations totals approximately 990,000 kilowatts. The Oahe plant and the additional units in both the Fort Peck and Garrison plants are included in this total. Big Bend plant capacity is not considered in these figures since it will be some time before this project is completed and as a result of special legislation passed by the Congress last year, approximately 50 percent of the total capacity of this plant is to be reserved for the State of South Dakota. Since the capacity of the plant has not yet been finally determined, it is not known how much additional power will be available to the remaining States in the basin. As far as Nebraska is concerned, it is anticipated that the additional power available from this plant will be small in any event.

At a 3-day basinwide meeting called by Secretary Aandahl in Sioux Falls, S. Dak., in December 1958, the Bureau presented for discussion a Study of Possible Disposition of Missouri River Basin Project Firm Power. This study was presented as one possible method of allocating a total of 990,512 kilowatts of Bureau power to be available in 1965 to preference customers in the States of Montana, North Dakota, South Dakota, Minnesota, Iowa, and Nebraska. It should be noted that this study in effect reallocates the allotments made in 1954.

Comments accompanying the study pointed out that a total of more than 250 applications had been received and that the aggregate total of these applications for 1965 is 1,648,000 kilowatts. It is obvious, then, that the requests for Bureau power far exceed the available supply.

The basis for allocation of Bureau power, as suggested in this study, is the total estimated peakload of the applicant in the winter of 1963–64 adjusted for loads outside of the marketing area and reduced by the amount of firm or assured generating capacity classed as "efficient units" that each customer has available or is expected to have available in 1965 to meet part of its load requirements. The remainder of the customer loads is then considered to be eligible for Bureau power, and it was determined that the Bureau power supply is equal to about 88 percent of such remaining loads.

This formula would have allotted about 182,000 kilowatts (exclusive of Federal loads) to NPPS and the class I and class II customers in its service area. The Omaha Public Power District would have received nothing and NPPS, including class I customers, about 125,000 kilowatts (including the 1954 commitment of 100,000 kilowatts) as compared to requirements of 150,000 kilowatts in 1963 and 200,000 kilowatts in 1965.

The net result of Bureau power allocation, if carried out in accordance with this study, would appear to be grossly unfair to Nebraska as pointed up by the following tabulation:

TABLE No. 1.—*Based on USBR "possible disposition study" of November 1958*

	Kilowatts
Total power available December 1965	1,033,000
Total available for "contracting"	990,512

[Percent]

State	Increase over 1954 allotment (exclusive of Federal loads) (1)	Ratio of proposed allotment to 1963–64 winter peak loads of applicants (2)	Ratio of customer loads by States to total of all applicants' loads (3)	Ratio of proposed allotment to total available (exclusive of Federal loads) (4)
Montana	20	63	2.0	2.5
North Dakota	70	68	11.0	14.5
South Dakota	35	86	11.5	20.0
Minnesota	120	66	20.0	29.0
Iowa	121	65	10.5	14.5
Nebraska	56	22	45.0	19.5

It is particularly striking that this study would give Nebraska an allocation equal to but 22 percent of the total 1963–64 winter peakloads as compared to from 63 percent to 86 percent to each of the other five States (column 2). Also it should be noted that while the ratio of customer loads in Nebraska to the total of all applicants' loads in all States is 45 percent (column 3), the ratio of proposed allotment to Nebraska to the total power available, exclusive of allotments for Federal loads, is but 19.5 percent (column 4).

Secretary Aandahl in his presentation stated that he did not intend power allotments would be considered on a State-by-State basis, but rather on the basis of individual preference customers, regardless of State boundaries. Nevertheless the tabulation above serves to set out the inequities inherent in this study.

After more than 2 full days of discussions, including many separate conferences with groups of customers from different areas, Secretary Aandahl and his staff at the final session of the conference acknowledged the difficulties inherent in the proposed method of allocation and stated that they had found the approach used in the study much more complex than had been anticipated. Secretary Aandahl then proposed a new and different approach.

The new suggestion would allocate the available firm power to all preference customers in the area on the basis of their applications for 1963 requirements. This would eliminate all adjustments with respect to efficient generation, and from preliminary analysis it appeared that each of the applicants would receive somewhere between 80 and 85 percent of the amounts applied for for that year.

The net result of this proposal compared to the original study would be to leave the allocations substantially the same other than to slightly increase the total allocation to Nebraska (exclusive of allocations to Federal loads) from approximately 182,000 kilowatts to 183,500 kilowatts. Under the second proposal, however, Omaha Public Power District would receive an allotment of approximately 25,000 kilowatts (against a request for 30,000 kilowatts in 1963 and 50,000 kilowatts in 1965) whereas it was scheduled to receive none under the initial study. For Nebraska Public Power System alone (including class I customers), the increase would be from approximately 126,000 kilowatts to 127,500 kilowatts. The total allotment to Nebraska, exclusive of allotments to Federal loads, would be approximately 23 percent of the estimated total peakload for the winter of 1963–64 as compared to 19.5 percent under the initial study.

It is quite obvious that the second proposal does not correct the inequities of the original proposal as far as Nebraska is concerned. The basic difficulty comes from the fact that some applicants (such as Nebraska Public Power System and Omaha Public Power District) based their applications for 1963 on the Bureau power actually needed to meet load requirements after utilizing all available generating facilities to best advantage, whereas the vast majority of other applicants applied for basically all of their load requirements regardless of availability of generating capacity. The inequity results from the fact that the customer who filed his application on the basis of need is penalized as against the customer who filed his application on the basis of maximum loads in the hope that he would thus realize his actual needs, or possibly more.

It must be recognized that Nebraska has a contract commitment of so-called seasonal summer power totaling 150,000 kilowatts. The Omaha District has contracted for 50,000 kilowatts and Nebraska Public Power System for 100,000 kilowatts. With respect to Nebraska Public Power System, the relationship of winter peaks to summer peaks on an estimated basis is as follows:

[Kilowatts]

Year	Winter	Summer	Difference
1959	331,000	450,000	119,000
1961	373,000	563,000	190,000
1963	412,000	641,000	229,000
1965	454,000	721,000	267,000

It will be noted that the anticipated difference in summer peak as compared to winter peak is considerably in excess of the amount of summer power available to Nebraska Public Power System. The available summer power in 1965 is only 36 percent of the total requirement. Furthermore, the contract commitment for summer power is firm only until 1966.

It would seem, therefore, that unless an entirely different approach were to be used under which summer peaks were considered in those areas where the summer peak is largest and winter peaks in the areas where the winter peak is largest, the procedure as so far contemplated; namely, of making the allocation of year-round firm power on the basis of winter loads, should not give any consideration to summer seasonal power commitments.

At this point, the question naturally arises—if the proposed procedures so far suggested are not equitable, what then would be the proper approach? We have concluded that a fair and equitable approach would be to make the allocation of all available firm power to all preference customers in the marketing area on the basis of their estimated actual peak load requirements in the winter of 1965.

It is estimated that the total load of the preference customers in the Missouri Basin marketing area who have applied for Bureau power is approximately 2,382,000 kilowatts in 1965. With some 945,000 kilowatts available after deducting proposed allocations to Federal loads, the amounts that could be allocated to each of the preference customers on this basis would be approximately 40 percent of their peak load requirements. The exception to this would be where an applicant had applied for less than 40 percent of his requirements, in which case he would receive only the amount applied for, and the excess thus would become available for reallocation to the remaining customers whose applications exceeded the amount available.

With respect to Nebraska Public Power System, the estimated peak load for the winter of 1965 is 454,000 kilowatts, and the firm power applied for is 200,000 kilowatts, or approximately 40 percent. The use of this formula would therefore give Nebraska Public Power System approximately 180,000 kilowatts as compared to some 125,000 to 127,000 kilowatts under the proposals heretofore discussed. This would be an acceptable approach.

Possibly some additional refinements would be necessary to carry out the basic concept of this plan, but it would seem that the principles involved are entirely fair, equitable and sound and not subject to artificial distortion or manipulation. It would permit the Bureau to make the allocation directly on the basis of preference customer requirements without considering State boundaries.

We recognize the overall problem as being one of allocating the available firm Bureau power to preference customers on a fair and equitable basis. The proposals that have so far been made public by the Bureau of Reclamation appear not to meet this qualification. It is hoped that a more equitable solution of the problem will be found and that all preference customers in Nebraska may benefit from a fair share of the available Bureau power on an equal basis with all preference customers in the basin. We recognize that the problems involved are many and complex because the available power is far short of customer demands. We in Nebraska must make known our position as we see it and we must present our case in a fair and reasonable manner.

I respectfully solicit your support since this is a matter that is of extreme importance to you, the customers of Nebraska Public Power System.

Mr. DEBOER. I also want to distribute at this time and also file for the record a short statistical study which I have prepared, and about which I would like to testify in some more detail.

Senator MOSS. That may be made a part of the record at this point.

(The information referred to follows:)

Statistical summary USBR power, Nebraska

[Kilowatts]

A. FIRM (YEAR AROUND) POWER

(1) 1954 allocation:

NPPS and class I	100,000
Class II	16,800
Subtotal	116,800
OPPD	0
Total Nebraska	116,800

(2) Estimated reallocation based on formula suggested in Sioux Falls December 11, 1958, conference including additional power available from Oahe, Garrison and Fort Peck in 1965. (Assumes allocation equal to approximately 85 percent of applications for 1963.)

NPPS and class I	127,500
Class II	56,000
Subtotal	183,500
OPPD	25,000
Total Nebraska (exclusive of Federal loads)	208,500

(3) Total Nebraska load all preference customers, winter 1963–64 ---- 893,000
Approximate ratio USBR power to total load, Nebraska, 23 percent.

(4) Estimated ratio USBR power to total load preference, customers other Basin States, 75 percent to 85 percent.

B. SEASONAL (SUMMER) POWER

(1) 1958 commitments (subject to cancellation in 1966):

NPPS	100,000
OPPD	50,000
Total Nebraska	150,000

(2) Estimated summer peak loads:

	1963	*1965*
NPPS	641,000	721,000
OPPD	550,000	662,000

(3) Difference between summer and winter peaks:

	1963	1965
NPPS	229,000	267,000
OPPD	170,000	212,000
Combined	399,000	479,000

(4) Ratio of seasonal power commitments to excess summer peak (percent):

	1963	1965
NPPS	43	37
OPPD	29	24
Combined	38	31

Mr. DeBoer. Examining this statistical summary, paragraph A, you will note, refers to firm or so-called year-around power. In 1954, the Nebraska Public Power System and its class I customers were allocated 100,000 kilowatts of this firm power. The class II customers located in the area served by Nebraska Public Power System at that time were allocated 16,800 kilowatts of firm power. As Mr. Fraser has told your committee, the Omaha district was allocated zero kilowatts at that time. So that as of now there is available and allocated to Nebraska 16,800 kilowatts of firm power, all of which, however, has not been contracted for. In other words, some of these class II customers have not contracted for their allotments to date.

Referring now to subparagraph (2), we have made an analysis of the formula suggested by Secretary Aandahl and his staff in Sioux Falls on December 11, 1958, which formula would reallocate the 116,800 kilowatts I have just referred to and add to it the additional power to be available from Oahe, Garrison, and Fort Peck projects progressively, and in total in 1965.

Our analysis here is based on an assumed allocation of approximately 85 percent of the applications filed by preference customers for their 1963 requirements. This data is obtained basically from the study presented to the group by Secretary Aandahl and his staff at that time, which study is already in the record. It was placed in the record yesterday.

Under our interpretation of the proposed formula, Nebraska Public Power System and its class I customers would be entitled to 127,500 kilowatts. You will note this is 27,500 kilowatts more than we are now entitled to and have under contract. The class II customers in the NPPS service area would be entitled to 56,000 kilowatts, or in the NPPS service area, 183,500 kilowatts.

Again, as Mr. Fraser has told your committee, the Omaha Public Power District would be entitled to approximately 25,000 kilowatts under this proposal, or a total for Nebraska, exclusive now of certain Federal loads which are are in the Lincoln Air Force Base and Offutt Air Force Base which the Bureau will supply 100 percent, to 208,500 kilowatts.

I think the key to this situation is in subparagraph 3, namely, that the total load of all preference customers in Nebraska, exclusive of Federal loads I have mentioned, in the winter of 1963, 1964, is estimated at 893,000 kilowatts. Therefore, the approximate ratio of the Bureau power allocation as proposed to the total load—preference load, that is—would be 23 percent.

At this point I want to correct a statement that Mr. Venable made, and I know he recognizes that it was an error, that under this proposal we would get 23 percent. That we actually have asked for approximately 40 percent. Now, this is then compared to the estimated ratio of Bureau power to all other preference loads in the other basin States of from 75 to 80 percent. Saying it more specifically, under the proposal, then, the Nebraska Public Power System and the Omaha Public Power District, serving the eastern two-thirds of the State of Nebraska, would be entitled to 23 percent of their requirements as against all of the other preference customers throughout the basin of somewhere between 75 and 85 percent.

We have raised the point that this would indicate that there are two kinds of preference customers in the thinking of the Bureau of Reclamation, namely, those who, under this formula, would be entitled to approximately 23 percent and those who would be entitled to the larger amounts of 75 to 85 percent. We feel that the Congress did not intend that there would be more than one kind of preference customer in the Flood Control Act of 1944.

Now, to continue, we will go to paragraph B. We know that there has been some misunderstanding and perhaps some criticism of the Bureau of Reclamation for having committed to Nebraska the seasonal summer power that was contracted for in 1958. The Nebraska Public Power System contracted for a maximum of 100,000 kilowatts and the Omaha Public Power District for a maximum of 50,000 kilowatts or a total of 150,000 kilowatts. As Mr. Fraser has pointed out, this is subject to cancellation on the part of the Government in 1966.

Now, to make this situation somewhat more understandable, I have listed here the summertime peaks of Nebraska Public Power System and Omaha Public Power District. In 1963, NPPS will have a summertime peak of 641,000 kilowatts and OPPD, 550,000. In 1965, Nebraska Public Power System will have 721,000 kilowatts, and OPPD 662,000 kilowatts.

Paragraph (3) gives the difference between those summer peaks and the concurrent winter peaks. In 1963, the Nebraska Public Power System will have 229,000 kilowatts of summer peak in excess of its winter peak. In 1965, 267,000 kilowatts. Likewise the Omaha district will have in 1963, 170,000 kilowatts of excess peak in the summertime over the winter peak, and in 1965, 212,000 kilowatts. In round numbers for the combined systems of the two agencies, there is 400,000 kilowatts of idle thermal generating capacity in the wintertime that has to be maintained to meet the summer peak in 1963, and in 1965, a like figure of 480,000 kilowatts.

Subparagraph (4)—and I am sorry there is an inversion in that paragraph; it should read "ratio of seasonal power commitments to excess summer peak"—you will note the ratio there for the combined systems is 38 percent in 1963 and 31 percent in 1965." Those ratios mean that in 1963 we in Nebraska have commitments for 38 percent of our needs in the form of summer Bureau power, and in 1965, this will have been reduced to 31 percent of our needs.

I point that out merely to compare that with the 75 to 85 percent of firm year-around power that the other basin States would get under this formula.

I want to point out also that this summer power is important to the State of Nebraska, and we are most grateful to the Interior Department for having committed this to us. I want to point out also, however, that this is a good deal for both the Government and for Nebraska, because we are paying firm-power prices for this power, therefore increasing the revenue that the Government gets for it as compared to selling it as dump power, as some other witnesses have indicated, and it permits us to meet a goodly portion, at least a third to a half of our summer peak which is occasioned by irrigation pumping and heavy summer loads due to hot weather, including the air conditioning and crop processing, without having to pay the fixed charges on thermal capacity the year around, which would be very nearly prohibitive as far as the buyer of this power is concerned. In other words, the individual irrigator just could not pay the price for this power if he had to pay the fixed charges on the kilowatts that he uses 2 to 3 months a year the year around.

Now I want to refer again to subparagraph (3), these kilowatts of idle thermal capacity. We feel that these idle thermal kilowatts in Nebraska should be made available to provide energy to be stored behind the main-stem river dams in the form of water. That is one way that the total amount of available power in the basin hydro system can be increased. We are ready—at least the Nebraska Public Power System is, I will not speak for the Omaha district, although I see Mr. Monroe is nodding his head—we are both prepared to negotiate with the Bureau for the sale of substantial amounts of this idle capacity for this purpose. We recommend that negotiations along that line be instituted as soon as possible.

We would like to sell the power, frankly, because it would mean some revenue to us which otherwise we would not get. We think it is a good thing for the basin to use this power which is there. I want to add that we are presently negotiating with the East River Power Cooperative in South Dakota, as Mr. Hanlon told this committee yesterday, for the sale of some of this thermal capacity to his cooperative directly. We are also negotiating with the L. & O. Cooperative in Rock Rapids, Iowa, on the same basis. We expect to negotiate with others in the upper basin States along the same lines. But this gives us problems because of the somewhat unrealistic displacement policy that we believe the Bureau insists on. Putting it another way, we think that this effective use of thermal capacity tied in with the hydro capacity requires a more realistic policy of displacement, or in other words, to permit the free flow of power over the existing transmission lines without economic barriers which increase the cost and make the integration proposal less attractive.

We have had a lot of experience in interchange of capacity between our system and the Omaha Public Power District, and they in turn with the Iowa utilities and with Kansas and with a number of utilities known as the Southwest Power Pool in Oklahoma, Texas, and so forth. We know that these things are really worthwhile dollarwise and that they pay off. But to make them successful you cannot have economic barriers in the way. You must use these transmission lines, shall we say, as common carriers to the fullest extent possible.

We concur with other testimony that has been given here yesterday and today that a new water availability and power supply study for

the entire basin area is in order. We would recommend that such a study be made and made promptly. Perhaps Senate Resolution No. 71, with which I am not familiar except that I have seen a copy, may do this. I am a little concerned about it, because it seems to be rather broad in its scope. I believe it covers the power systems throughout the United States, if I read it correctly.

Senator Moss. It covers all water matters, not only power, but water for all purposes. It is very broad.

Mr. DeBoer. I see, sir. Just a word about the Missouri Basin as it is now operating. We in Nebraska are interested in both power and navigation. Navigation on the Missouri River is important to Nebraska. The intent of the Congress was to operate this Missouri Basin system as a multiple-purpose system. I am sure of that. We think it ought to be continued on that basis. We feel that the Corps of Engineers is doing an excellent job of allocating this water at the present time in accordance with the present requirements of that multiple purpose operation, as we understand it. I am sure the corps will do a better job with more experience. Obviously they have not had a chance to really get into a long-term program because the reservoirs are not complete, they are not filled, and we have had some adverse water years in the meantime. We feel confident that the present program is workable and should be given a real honest-to-gosh trial.

Then to draw some conclusions from our analysis of the situation as I have briefly discussed it: I would say, first, that we fully recognize that the basic problem in the Missouri Basin is to make an insufficient power supply stretch to meet an excessive demand.

Secondly, that a formula must be found that will distribute the available power among all preference customers and on an equitable and consistent basis. There can be only one grade of preference customer, or saying it another way, there can be no "preferred" preference customers. A formula which will in general relate the available power to the anticipated winter load requirements of each preference customer in 1965 would, in our opinion, form a sound basis for equitable allocation of the additional firm power. We have suggested such a formula to Secretary Aandahl and his staff. I believe they are studying it. Perhaps it won't work. Perhaps it has serious defects. We can think of one modification that would be needed most surely, and that is if under a formula of this kind any particular preference customer would receive an allocation in excess of his application, obviously he should be allocated the amount of his application. There are probably other modifications that would have to be made.

Thirdly, the utilization of existing wintertime thermal generating capacity in the basin is an effective and immediately available way to increase the firm energy storage behind the main stem dams during adverse or below-average water years, and by this means maintain the available firm power supply behind these dams at a maximum level.

Fourth, a more realistic approach to the power replacement principle is necessary to make free flowing interchange of hydro and thermal power economically attractive.

Senator Hruska. Mr. DeBoer, at that point, may I ask if there is sufficient basinwide backbone transmission to allow for the efficient use of the capacity that you have just suggested? The use of our

thermal capacity in exchange for summer power. What about the transmission facilities?

Mr. DeBoer. I believe, Senator, with the transmission facilities that are currently projected, there will be. This gives me an opening that I would like to take advantage of to say something about the transmission capacity. You have touched on it before. Nebraska has for a number of years, as you know and the committee undoubtedly knows, endeavored to get congressional appropriations for the Bureau to build a 230-kilovolt line into Nebraska from Fort Randall. We have been unsuccessful in that, and we are now building that line ourselves. We hope to have it completed by January 1, 1960. It, together with the existing lines and the line that the Omaha District proposes to build, I believe, Senator, will provide the necessary transmission facilities to do this, because actually what will happen is that we will displace power that would normally come down to Nebraska, and in effect not permit it to come down, if you understand what I mean. So that then it relieves the transmission capacity in this displacement program Repeating what I said a moment ago, to make this feasible and proper, there should not be artificial barriers in the form of wheeling and losses tacked onto this. Does that answer your question?

Senator Hruska. Yes, it does. In all fairness to the Bureau, they did not deny the building of that line with appropriated funds. The principal objection was as to its timeliness, is that correct?

Mr. DeBoer. That is correct. We are not criticizing the Bureau.

Senator Hruska. I did not want the record to indicate that they were deaf to our pleas that the line should be built. They did not say it should not be built. They said at the time of those applications it was not timely.

Mr. DeBoer. That is correct, Senator.

Senator Hruska. I might add that there was some difference of understanding and of opinion on that particular point, as you know, Mr. DeBoer.

Mr. DeBoer. That is right.

The fifth point is that a new water and power availability study in the light of known conditions and operating experience to date appears to be in order. Senate Resolution No. 71 may very well be the proper vehicle to initiate this study.

Sixth, the preference customers in Nebraska are asking only their fair share of the Missouri Basin power. Their fair share as we see it today would be roughly on the order of 40 percent of our 1965 load requirements. That would be all we have applied for and all we would expect to get. But we think we ought to be entitled to that, since obviously the other preference customers will presumably get more than that.

Senator Hruska. Mr. DeBoer, have you the figures showing how much in terms of percentage that would be of the total power available for allocation from the big-stem dams?

Mr. DeBoer. Approximately 200,000 kilowatts.

Senator Hruska. And what percentage would that be?

Mr. DeBoer. Forty percent. No; that would not be correct.

Senator Hruska. Forty percent of your needs is what percent of the total power generated in the big-stem dams available for allocation?

Mr. DeBoer. One-fifth.

Senator Hruska. About 20 percent.

Mr. DeBoer. Yes, sir.

Nebraska preference customers want to cooperate with the preference customers in other basin States in the interest of maximum utilization of available resources for the benefit of all. I want to emphasize that we are not here to rob any other preference customer. We want them to get all that they can possibly get to the fullest extent of the available resources.

Seventh, it is essential that the power agencies throughout the basin work together toward a common goal, all the while recognizing the legitimate rights of other interests. We cannot afford a feud between the upstream and downstream States.

Finally, all preference customers in our opinion must realize that the available supply of Missouri Basin hydropower is inadequate to meet all of their future needs and that they must therefore make plans now to provide for those needs by whatever means are logically available to them.

That is the end of my statement, Mr. Chairman.

Senator Moss. Do you have any questions, Senator?

Senator Hruska. Mr. DeBoer, a little bit ago you suggested that the Corps of Engineers would do a better job and can do a job with the accumulation of more experience in reference to the multiple-purpose dam system in the upper Missouri River. That is not by reason of lack of experience of the working of the entire system as it is being completed?

Mr. DeBoer. Of this particular system, that is correct.

Senator Hruska. Likewise, as time goes on that experience will enable a better understanding of how that whole system will work in its completed form, isn't that true?

Mr. DeBoer. That is my understanding.

Senator Hruska. You suggested that the rates which are being paid in Nebraska for the summer power, which is the subject of your discussion here in your statistical summary, is an advantage to the Government because the rates paid are higher than the dump rates secured when the sale of that power is made to other customers. Do you have readily available the relative rates on that?

Mr. DeBoer. We pay the regular rate which is approximately 5.5 mills per kilowatt-hour and a 50-percent load factor basis, less 1 mill which the Bureau allows because of the wheeling over our transmission system. Then there is a small discount of 5 percent because we supply the stepdown substation facilities. The sales of dump power—actually I have no information on that, but if they were selling dump power to us on the basis of our fuel costs, it would be of the order of 2¼ to 2½ mills per kilowatt-hour.

Senator Hruska. But you have no information readily available as to what actual sales have been on fuel cost basis?

Mr. DeBoer. I do not, Senator. I do not know what has been sold in other places.

Senator Hruska. Mr. Chairman, I wonder if we could have counsel obtain that figure and insert it at this point in the record so that we may have it available.

Senator Moss. Would you do that for us, sir?

Senator HRUSKA. Committee counsel probably can.
Senator MOSS. It will be put in the record at this point.
(The information referred to follows:)

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D.C., April 28, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR SENATOR MURRAY: In accordance with telephone request to Mr. Baker of this office on April 15, 1959, there is attached a tabulation showing dump energy sales on a fuel replacement basis, Missouri River Basin project, eastern division, for calendar years 1957 and 1958.

We are pleased to furnish you with this information.

Sincerely yours,

FLOYD E. DOMINY,
Associate Commissioner.

Missouri River Basin, eastern division, dump energy sales on fuel replacement basis

CALENDAR YEAR 1958

Customer	Delivery point	Kilowatt-hours	Revenue	Average rate (mills per kilowatt hour)
Northern States Power Co.	Fargo and Grand Forks	10,989,000	$36,041.94	3.28
Do.	Minot	32,924,000	87,029.30	2.64
Do.	Sioux Falls and Granite Falls	293,438,000	630,232.40	2.15
Subtotal		337,351,000	753,303.64	2.23
Northwestern Public Service Co.		1,104,205	3,864.72	3.50
Nebraska Public Power System		33,446,000	73,617.84	2.20
Iowa Public Service Co.		197,999,000	556,132.56	2.81
Minnkota Power Cooperative		23,134,778	80,971.72	3.50
Total, year 1958		593,034,983	1,467,890.48	2.48

CALENDAR YEAR 1957

Northern States Power Co.	Fargo and Grand Forks	76,107,200	$253,775.66	3.33
Do.	Minot	10,818,000	27,584.80	2.55
Do.	Sioux Falls and Granite Falls	222,192,000	486,648.88	2.19
Subtotal		309,117,200	768,009.34	2.48
Northwestern Public Service Co.		4,307,952	15,077.22	3.50
Nebraska Public Power System		73,016,000	190,453.64	2.61
Iowa Public Service Co.		158,121,000	463,386.99	2.93
Minnkota Power Cooperative		26,278,540	91,555.73	3.48
Ottertail Power Co.		1,046,767	3,063.68	3.50
Total, year 1957		571,887,459	1,532,146.60	2.68

Senator HRUSKA. Thank you, Mr. DeBoer. Thank you, Mr. Chairman, for your courtesy in allowing my questions of this witness.

Mr. STONG. Mr. DeBoer, does this indicate that your fuel costs are 2¼ to 2½ mills per kilowatt-hour?

Mr. DEBOER. No; those are our incremental costs. We would pay for this dump power at our incremental cost less 15 percent.

Mr. STONG. Does this table here indicate that in the winter of 1963 you will have approximately 400,000 kilowatts of excess winter capacity?

Mr. DEBOER. That is correct. I want to modify that, though, by stating that includes approximately 12 percent of reserves, which we would not be willing and could not commit to others.

Mr. STONG. Has the Bureau of Reclamation ever approached you to work out an exchange agreement whereby they would use this capacity to firm up more of their summer power, and have totally more firm power in the basin?

Mr. DEBOER. To my knowledge they have not. We have discussed it with them. I might say that our relations with the Bureau have been very cordial and friendly. We have discussed these things as well as many others of a similar nature from time to time. But it is my understanding that their policy will not permit this. I would not like to speak for them, but that is my understanding.

Mr. STONG. If their policy would permit, however, is there a potentiality here of firming up and making available in the basin the 200,000 or 300,000 additional kilowatts of firm power?

Mr. DEBOER. I believe that we in Nebraska would be ready to commit 300,000, and perhaps more, of this idle capacity for that purpose.

Mr. STONG. Then this could be added to the present million-kilowatt allocation.

Mr. DEBOER. I prefer not to answer that, because the relationship is probably not direct. In other words, when you raise the head behind these dams, the power potentiality goes up faster than the purchase of this amount of kilowatts would indicate.

Mr. STONG. Is it likely, though, with an interchange agreement with Nebraska that the 1963 winter peakloads in the basin, which they are going to be unable to meet by 15 to 20 percent, could be met?

Mr. DEBOER. I don't think I am competent to answer that because I don't know what the shortage is. It would seem to me that they would come very close to it.

Mr. STONG. That is all, Mr. Chairman.

Senator Moss. Thank you very much, Mr. DeBoer.

Mr. DEBOER. Thank you, Mr. Chairman.

Senator Moss. We now have Mr. Helge Nygren, of Flasher, N. Dak.

Mr. STONG. Mr. Nygren has not come in.

Senator Moss. Are there other witnesses who have not been called who came prepared to testify at this hearing? If not, this hearing will now recess and reconvene Monday at 10 a.m., in this room.

The committee will recess and reconvene on Monday at 10 a.m.

(Thereupon at 12:10 p.m., a recess was taken until Monday, February 16, 1959, at 10 a.m.)

36683—59——12

FEDERAL POWER MARKETING PROBLEMS

MONDAY, FEBRUARY 16, 1959

UNITED STATES SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10 a.m., in room 3110, New Senate Office Building, Senator Richard L. Neuberger presiding.

Present: Senator Neuberger.

Also present: Benton J. Stong, professional staff member.

Senator NEUBERGER. We will be very pleased to hear from Congressman Coad of the Sixth Iowa District if he is here. Congressman, we are glad you are here.

STATEMENT OF HON. MERWIN COAD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Representative COAD. Thank you, Senator. It is nice to be here. It is especially nice to see you among us.

Senator NEUBERGER. You are very kind to say that, and I am very pleased to be back.

Representative COAD. My name is Merwin Coad. I represent the Sixth District of Iowa in the House of Representatives. Most of this area is rural. It is natural, therefore, that my primary interest in the matter before your committee is the interest of my rural constituents.

Most of this area receives its electric service from rural electric cooperatives financed by the Rural Electrification Administration. There are some towns in my district that operate their own power producing and distribution facilities. These rural electric cooperatives and municipal systems are preference customers under provisions of the Flood Control Act of 1944, and have applied for power produced at the Federal powerplants on the Missouri River that will be available in increasing amounts in the future. Some of my area is now receiving this power and has since 1956. The last round of applications in 1958, and the proposed allocations of this power by the Assistant Secretary of the Interior, indicates that many additional people in my district will enjoy the benefits of this power. I urge you to keep in mind, however, that the power available in the marketing area is adequate to meet power needs of the preference customers for only a very short time. They then must turn elsewhere for much higher cost power supply. It is to these problems, increasing the power available and the matter of cost allocation, that I wish to invite your attention.

The O'Mahoney-Millikin amendment to the Flood Control Act of 1944 specifically provides that water shall be used for navigation only to the extent that it does not conflict with certain other uses, among which is the use for industrial purposes. Clearly our agricultural production is an industry, and power required to supply the needs of our farms, by law, takes preference over use of water for navigation purposes. It is my opinion that there is much conflict over the application of the O'Mahoney-Millikin amendment, and that Congress should make it clear that under the O'Mahoney-Millikin amendment, use of water for production of power to be used by preference customers has priority over water use for freeflowing navigation.

In fact, I believe Congress should define the priority of water use for all purposes on these multipurpose projects. This procedure would then provide in unmistakable terms how the Corps of Engineers would operate the Missouri River.

Another matter of great concern to me is the basis of allocation of costs among the various features of these multipurpose and reclamation projects. I understand many formulas have been used on the Missouri Basin project. As far as I can determine the most recent allocation shows that about 33 percent of the total reimbursable costs is allotted to commercial power. The repayment schedule shows that commercial power will repay about 89 percent of the reimbursable costs. In the last Congress a bill was introduced that would give to Congress the authority to approve the allocation of costs among the many features of these multipurpose projects prior to construction. I strongly endorse such legislation and will do my best to promote passage of H.R. 8 introduced in the 86th Congress on January 7, 1959. I shall also support H.R. 289 to amend the Reclamation Law by establishing criteria for use of the Interior Department in analyzing project costs and the allocation of these costs to the various features. It seems to me that these are essential steps to be taken in the interest of effective development and use of our great natural resources.

Historically there is evidence that our concept of the need for electric power is always less than is actually required to meet the loads. This has been equally true in the Missouri Basin. People associated with the early development of the Missouri River power system have told me that power company representatives spoke at service clubs throughout South Dakota stating that when this system is complete we will have power coming out of our ears. This philosophy does not square with the actual facts. The 1954 allocation of power was not adequate to meet the needs of the preference customers in the marketing area. My secretary, Mr. E. J. Peters, attended the meeting at Sioux Falls, S. Dak., on December 9, 10, and 11, 1958, where Assistant Secretary Aandahl announced tentative allocation of power to become available in 1961 and later. He brought me first hand information that there was not enough power to meet the needs of the preference customers in 1963—4 short years away. I am convinced that steps need to be taken to firm up the hydropower in such a manner as to get much more firm power from the hydro plants. There are alternative methods for getting this done. One is construction of federally owned large steam plants. Perhaps consideration should be given to Federal construction of a large nuclear plant. I believe some purchase-exchange arrangement could be worked out with preference

customers now receiving Missouri River power. We need additional transmission lines in Iowa so that other such arrangements could be worked out with preference customers in Iowa.

There are other witnesses to testify in the interest of Iowa. In May 1957, I testified before the Joint Senate Interior and Insular Affairs and Public Works Committee, who were hearing testimony on the use of Missouri water. The statement I made then is still good and I would like to submit it as part of the record for this hearing. It is found in this document on page 43.

Senator NEUBERGER. It will be included in the hearing record.

(The statement referred to follows:)

STATEMENT OF HON. MERWIN COAD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Representative COAD. Mr. Chairman, my name is Merwin Coad. I represent the Sixth Iowa District in the House of Representatives from the State of Iowa. The Sixth District of Iowa is composed of 15 counties in the northwestern and north central section of Iowa.

Most of this area is rural. It is natural, therefore, that my primary interest in the matter before your committee is the interest of my rural constituents. Most of this area receives its electric service from rural electric cooperatives, financed by the Rural Electrification Administration.

I cannot speak too highly of the Rural Electrification Administration program and what it has done for the rural people of the country as a whole, and specifically for that part of Iowa which I represent.

I know that you gentlemen are aware of that program, and that you know the story at least as well as I do. I will, therefore, not take your time to tell you about the importance of that program to the farmers and of the great benefits that it has brought to the rural communities. But I do plead with you to keep in mind at all times during the consideration of the problem before you how important that problem is to the rural areas of the Missouri Basin.

In the part of Iowa that I represent, the Missouri River Basin makes one very important contribution, and that is that it makes available to the farmer, through his rural electric cooperative, the benefits of low-cost power.

In 1956 alone, it is estimated that the rural electric cooperative in my area saved more than $200,000 through their ability to purchase low-cost power at wholesale instead of purchasing it from the private utilities. Actually, these benefits should increase as the use of electricity by the farmers increases, but in the existing circumstances, there is a very real danger that the benefits will decrease rather than increase, unless Congress does something about it.

The area of Iowa that I represent is threatened with a power shortage within the next 2 years. Unless a solution is found and adequate supplies of low-cost power are made available, the farmers will have to curtail their use of electricity. They may be able to buy additional power that they will need from private sources at 2½ times the cost of their present power. That is hardly a solution to the problem that they face.

It seems to me that there is only one way to look at this problem. Plans must immediately be made and carried out to secure for these rural areas all of the power that they will need at prices which they can afford to pay.

I am not an engineer, but I do have a general knowledge of the situation. The information which has been given to me from very reliable sources is that there are two approaches to this problem which must be taken:

(1) Slack-water navigation: By resorting to slack-water navigation, we not only help to preserve the water for hydroelectric generation, but we also improve its use for navigation. I am told that proper slack-water navigation would even improve flood control.

(2) Every effort should be made to firm up the hydroelectric power with steam power. I am informed that this can be done economically in this area primarily because of the large supply of low-cost lignite, which is available in abundant supply in North and South Dakota. I also understand that it is good economics for the Government to firm up its hydropower because then it will have a great deal more firm power to sell at the higher prices which firm power receives.

I cannot understand why this has not actually been gone into by way of an outright program before. When the needs of the people require it, and when it is good economics, I cannot see any real reason why it has not been done in the past or why it should not be done in the immediate future.

These are two long-term solutions which seem desirable and necessary.

In the meantime, of course, there is the problem of how to use the water which is not sufficient to meet both the power generation needs and the navigation needs. I sympathize deeply with the navigation people. I should like to see their problems solved. But I cannot see that their need is as great as the need of all of the people who would be affected by an inadequate supply of electricity.

Therefore, during the period when there will not be enough water fully to meet the needs of both power generation and navigation, I firmly believe that the needs of power generation must be met first.

This is a position which I believe must be taken as a matter of sound judgment and policy. But it is my understanding that in addition to it being a matter of sound policy, it is a requirement of the Flood Control Act of 1944. The Flood Control Act of 1944 specifically provides that water shall be used for navigation only to the extent that it does not conflict with certain other uses, among which is the use for industrial purposes. Clearly, the generation of power is an industrial purpose. Therefore, it is a matter of law that the water shall first be used for generation if needed before it is used for navigation.

In closing, I would like to join my fervent plea with that of my rural electric friends and constituents that your two committees immediately proceed to provide slack-water navigation and firming steam power for the Missouri River Basin and, until these results can be accomplished, I urge that you instruct those now responsible for the administration of the projects in the Missouri River Basin to operate them in accordance with the law and sound judgment and to provide fully for power needs before diverting any of the water for navigation.

I thank you very much for giving me the privilege of making this statement.

Representative COAD. Also, and this has just been brought to my attention, Senate Resolution 71, of which Senator Neuberger, you are a cosponsor, I should like at least to state my interest, and my interest also in further study of this matter. I feel it is a very good step in the right direction in having a total survey of the entire electrical needs of the United States. I would like to go on record as favoring a study of this kind to be made.

This is the end of my statement, and I will submit to questions, and if there are no questions, I have an introduction to make.

Senator NEUBERGER. Congressman, we are delighted to have you here. I have just one question to ask you: In the Sixth District of Iowa, which you represent so ably, do you know offhand how the purchases of federally generated power are divided between preference and nonpreference customers?

Representative COAD. Of course, the preference customers have the right to all of the firm power.

Senator NEUBERGER. Do they take all of the firm power?

Representative COAD. They are taking all they can get.

Senator NEUBERGER. I am interested so I can make some comparison in my own mind with the situation in the Pacific Northwest, where I come from, and I just wondered what percentage of the firm power is purchased from the Government by preference customers and what percentage by nonpreference customers.

Representative COAD. Perhaps I ought to clarify what I am talking about. All of my district is not within the confines of receiving power from the Missouri River Basin. Only two of my southwesternmost counties qualify. It would be true if we had a line extending from Sioux City down across Iowa, that we could expand to the extent that

those who are qualified could fill in with their power. They simply are not able to get it now because there is not a transmission line by which they can receive it. It is being now handled through the various hookup lines of REA cooperatives.

Senator NEUBERGER. There is a certain amount for federally generated power that does come into your district, is that correct?

Representative COAD. That is right.

Senator NEUBERGER. Is all of it taken by preference customers?

Representative COAD. It is not.

Senator NEUBERGER. You do not know what the difference in proportion is as between preference and nonpreference customers with respect to that power?

Representative COAD. The situation is this: There is a large amount of dump power that is being generated that exceeds the demands of our preference customers.

Senator NEUBERGER. Who purchases that?

Representative COAD. It can be purchased by the utilities.

Senator NEUBERGER. By the private utilities?

Representative COAD. That is right.

Senator NEUBERGER. Is any of it purchased by industry for direct use?

Representative COAD. I am not apprised of the fact.

Senator NEUBERGER. Thank you very much, Congressman Coad. We appreciate having you here. We will be pleased to have your introduction of the distinguished Governor of your State.

Representative COAD. Thank you. It is my very great pleasure at this time to introduce to you, Senator, the very distinguished and honorable Governor of Iowa, Herschel Loveless.

Senator NEUBERGER. Governor, it is very nice to see you and to have you here with us under the auspices of Congressman Coad.

STATEMENT OF HON. HERSCHEL LOVELESS, GOVERNOR OF THE STATE OF IOWA

Governor LOVELESS. Thank you, Senator. I do want to thank you for making the time available this morning. I appear before you as Governor of the State of Iowa to discuss with you some aspects of the utilization of the water resources in the Missouri River Basin. Of course, as you know, the Missouri Basin affects a large number of States in the North Central part of the Nation, and the economic opportunities available to the millions of the citizens living in this area.

It is not in the least surprising that there is a diversity of interests, in the way in which these resources will be utilized. The needs of some sections of the Missouri Basin differ significantly from needs in other areas of the basin; in some areas the major interest is in the utilization of water for irrigation—while in other areas the major interests are navigation power, stream sanitation, and municipal use.

Several years ago it was wisely decided to establish a coordinating agency through which the diversity of interests could be reconciled and the valuable resources of the river utilized in an efficient manner, with due consideration for the competing demands upon the available water supply.

It is now well established that the development of the water resources of the Missouri River Basin includes provision for uninterrupted flow of water for stream sanitation and municipal use; for irrigation; for flood control; for navigation; and for the generation of electrical energy.

Although the relative emphasis placed upon these separate uses has varied from time to time, I believe I am correct in my view that all of the listed objectives are still accepted as valid.

It is, of course, perfectly natural to expect that we will reevaluate the urgency of the competing demands from time to time, in order to provide flexible programs capable of meeting the changing needs of the Missouri River Basin communities. My appearance here today is based upon a conviction that these needs must be reevaluated and that, as Governor of one of the most populous States in the basin, I have an obligation to represent their views and needs.

I should like to make it perfectly clear that I do not appear in a narrow, provincial role as the spokesman "for" one group of interests, and "against" another group of interests. Although it is perfectly reasonable to recognize certain diversities of interest, I think it is also appropriate to recognize that there is an even greater area of common interest in a rational development of the resources of the great river. My primary emphasis, then, is upon further development of total resources—rather than upon a narrow sectional interest in arguing the merits of one use against another, or the demands for one particular purpose against those of another.

It is well established that the total demands on the water resources of the Missouri Basin will increase substantially during the foreseeable future. In a very exhaustive study, entitled "Adequacy of Flows in the Missouri River," the Missouri Basin Inter-Agency Committee estimated in 1951 that the annual requirements, as affecting flows at Sioux City, would rise from 16.5 million acre-feet in 1960 to 22.7 million acre-feet in the year 2000. Most of the increase arises from upstream depletions for irrigation and other agricultural programs according to this study.

In the same study it is estimated that the competing demands in the form of upstream depletions will reduce the average annual gross energy generation of main-stem projects from 8.2 billion kilowatt-hours in 1960 to 6.3 billion kilowatt-hours in the year 2000.

The water requirement for the generation of electrical power does not use up water in the same sense as some of the other competing uses, such as irrigation. By careful integration of the various segments of the reservoir system, a large block of hydroelectric power can be realized with resulting benefits to the entire area.

While the generation of power in itself does not result in serious loss of water, it should be recognized that some of the other competing uses for the water available do limit the availability of electrical power in the area. The principal point that I wish to make today is that because of the growing demands for electrical energy, and because of the estimated increase in the amount of water resources required for irrigation, sanitation, and municipal use, the time has now come when we need to reexamine some of the fundamental assumptions underlying the development of the basin.

According to estimates contained in the report of the Missouri Basin Inter-Agency Committee, referred to above, almost 10 million acre-feet of water will be required annually to maintain adequate flow for navigation purposes as measured in Sioux City, Iowa. This amount is in addition to that required for public health and stream sanitation purposes. The estimate of the volume of flow needed to maintain navigation for approximately 8 months is based on the assumption that navigation in the Missouri River will be free-flowing, rather than the slack-water system of navigation now in effect on the Mississippi and Ohio Rivers.

At the present time, the Mississippi River is carrying approximately 10 times as much tonnage on an annual basis as is the Missouri River. The seasons for the two rivers are slightly different. In the Mississippi River the length of season is based upon weather conditions and stops in the fall when the river freezes up, and opens again in the spring when the river is free of ice.

The navigation season on the Missouri River, however, is based primarily on releases from the reservoirs located above Sioux City, Iowa. The release for navigation in any given calendar year is based upon the total storage available and the distribution made of this water to the various uses, including flood control, irrigation, navigation, pollution, municipal and industrial, and recreational uses. Normally the season for navigation in the Missouri River is 8 months and will be slightly shorter than that in the Mississippi River. However, at the completion of all the main-stem reservoirs on the Missouri, there will probably be sufficient quantity of water available so that the releases for navigation can be started earlier in the spring and retained longer in the fall. For the past few years, practically all the releases from the main reservoirs on the Missouri River have been through the power generators and have served a dual purpose of providing water for navigation.

The potential for navigation increases on the Missouri River is greater than that on the Mississippi River; the comparison figures for these two rivers during the period 1953 through 1957 are as follows: The increase in the Mississippi amounted to 40 percent during the same 4-year period; the increase on the Missouri River amounted to approximately 100 percent. Figures are as follows:

Mississippi River

[Tons of cargo]

	1956	1955	1954	1953
Minneapolis, Minn., to mouth of Missouri River	20,671,428	18,635,366	16,295,544	14,741,315
Mouth of Missouri to mouth of Ohio	22,891,688	20,173,035	17,663,048	15,942,576
Missouri River, Kansas City to mouth	1,856,868	1,277,632	1,245,135	966,344
Sioux City, Iowa, to Kansas City	2,519,700	1,911,471	1,478,488	1,580,382

Another item of significance is the average number of miles such tonnage of river cargo was transported. On the Mississippi River above St. Louis, each ton of cargo is carried an average of 180 miles. On the Missouri River, the stretch between Kansas City and St. Louis, each ton of river cargo was transported less than 66 miles. On the stretch above Kansas City, each ton of cargo was transported

an average distance of less than 11 miles. The figures for 1958 will be somewhat different on the Missouri River, due to the stabilization of the river and the providing of a 9-foot navigation channel upstream toward Omaha. As soon as the 9-foot channel can be provided between Kansas City and Sioux City, Iowa, the tonnage of cargo transported by navigation will no doubt increase tremendously.

A breakdown of navigation on the Mississippi River between Hannibal and Guttenberg for the calendar year 1957 is as follows:

	Tons
1. Traffic originating within district	1,226,063
2. Traffic terminating within district	2,049,629
3. Through traffic	5,501,830
4. Intradistrict traffic	689,965

It is respectfully submitted that the possibility of converting the Missouri River to a slack-water system of navigation, should be reexamined.

I want to make it perfectly clear that this suggestion is made with the full knowledge that the characteristics of the Missouri River are quite different from those of the Mississippi and Ohio Rivers, on which slack-water navigation has proved to be highly successful. For one thing, the fall of the Missouri River is considerably greater than in the Mississippi. Sediment control will present more serious problems in the Missouri, than in the Ohio, because of the slope and fall in the river, and also because of differences in soil types and characteristics.

It may well be that the soil types found in the Missouri River channel will present problems in the construction of the necessary dams and locks, which were not encountered in the Mississippi or Ohio Rivers. But even with the problems I have recognized the availability of a firm waterflow for the generation of electrical power is sufficiently needed to justify a reexamination of the feasibility of a slack-water system.

If engineering studies should determine that a slack-water system is feasible and economically justifiable under existing and prospective demands for electrical power, I think it is entirely reasonable to expect that the navigation facilities would better serve the purposes of the area than is likely to be the case with a free-flowing system. For one thing the slack-water navigation system is somewhat more dependable and probably could be kept open during a longer transportation season than would be the case with a free-flowing navigation system. If the Missouri Basin is to attract industry based on water transport and the availability of water for industrial use—it seems to me that the slack-water system would have many advantages in addition to increased hydroelectric power available on a firm basis.

I sincerely appreciate the opportunity which has been given to me to present these ideas to the committee. I assure you that the citizens of Iowa have a continuing interest in the development of the resources of the Missouri Basin. In the pursuit of these interests, I believe you will find our citizens to be ready and willing to cooperate with their neighbors in other Basin States to the end that the resources of the area may be utilized to the fullest possible extent.

That is the end of the formal part of this presentation, sir. I would be happy to answer any questions you might direct to me.

Senator NEUBERGER. Thank you very much, Governor Loveless. Coming from the State of Oregon and the Pacific Northwest, we feel a particular kinship with you people who live in the great Missouri Basin. The Columbia Basin and Missouri Basin are back to back at the Continental Divide, as you realize, and of course the great explorers, Lewis and Clark, of whom we are particularly conscious in Oregon this year because this is our centennial year, went up the Missouri and then came down the headwaters of the Columbia. So our two river basins are intertwined, not only in geography, but also in history.

Governor LOVELESS. That is right.

Senator NEUBERGER. I would like to ask you one question, if I may. As a member of the Senate Public Works Committee as well as the Interior Committee, we had a good deal of discussion over the operation of the preference clause in the Missouri Basin as it applied to a State which is preponderantly public power like Nebraska and preponderantly private power like South Dakota. Has there been any similar controversy in your State of Iowa in this regard?

Governor LOVELESS. We are quite a distance removed from the source of power and the upstream reservoirs and hydroplants of the Missouri, and as a result we are limited in the amount of firm power that is made available to a preference customer in Iowa. The dump power, of course, is fed into the private utilities as it becomes available. The firming up of power is the major problem, as I see it, Senator. I am unable at the moment to give you accurate figures as to the division between the firm and the dump power in numbers of kilowatts. I would be happy to make that information available to the committee.

Senator NEUBERGER. Congressman Coad mentioned the need to firm up the generation of power with steamplants and possibly even nuclear plants at some later date. Do you feel that is something which the Congress should consider?

Governor LOVELESS. I think that a consideration should be given to the possibility of nuclear plant development as a stabilizing factor in this grid of power produced by the basin area. This has had some discussion among the members of the Inter-Agency Committee comprised of the Governors of the States.

Senator NEUBERGER. Thank you very much, Governor. Mr. Stong has a question.

Mr. STONG. Governor, on Saturday a spokesman for the Nebraska public power system testified that they had approximately 300,000 kilowatts of surplus winter steam capacity that they would be happy to make available to the Bureau of Reclamation to firm up some of this surplus summer power. He said it is his opinion that if they could not totally meet the requirements of the preference customers in the basin in the winter of 1963–64, they could come very close to it by an interchange of Bureau summer power with Nebraska surplus steam capacity. Would it seem to you desirable to firm up as much of this power of the Bureau of Reclamation as possible in that manner and with other steamplants?

Governor LOVELESS. That has a possibility, of course, that has not been spelled out to me before this moment. I am trying here to point out that the basic evaluations that have been made in the basin must

be under a constant reevaluation of the growth in the demands on water as we can foresee them, maybe not in your and my future, but in the future that we hope to leave. So that is my reason for suggesting that we reevaluate this thing and see if slack water navigation is an answer in this overall picture.

I think the original concepts of the basin area have been reasonably well met, but the ever-constant changing demands need to be brought into focus. We naturally are an agricultural State, but we are developing in the area of industry and we must develop if we are to retain something for our people to do as the farms become larger and more and more of the farming population become urban dwellers and need an outlet for their energies and a method of making a livelihood for the family. That is my point in suggesting this reevaluation.

Mr. STONG. To make the record clear, you referred to slack water on the Mississippi River.

Governor LOVELESS. Yes.

Mr. STONG. You mean the Upper Mississippi River.

Governor LOVELESS. Yes.

Mr. STONG. Above Keokuk, Iowa.

Governor LOVELESS. Basically; yes.

Mr. STONG. As I recall, the channel is a flowing channel below Keokuk and past St. Louis.

Governor LOVELESS. I guess basically you are probably right.

Mr. STONG. Isn't it a fact that part of the demand on the Missouri River water is to get traffic over the shoals of the Mississippi above St. Louis?

Governor LOVELESS. That is partially true. With the navigation now controlled by the amount of water permitted out of the upper basin area above Sioux City.

Senator NEUBERGER. Thank you so much, Governor. We are honored and pleased to have you with us today.

Governor LOVELESS. Thank you, Senator.

Senator NEUBERGER. The next witness following Governor Loveless will be Mr. Lloyd Caulkins, Le Mars, Iowa, member of the Midwest Electric Consumers Association, manager of the Northwest Iowa Power Cooperative.

STATEMENT OF LLOYD CAULKINS, LE MARS, IOWA, MEMBER, MIDWEST ELECTRIC CONSUMERS ASSOCIATION, AND MANAGER, NORTHWEST IOWA POWER COOPERATIVE

Mr. CAULKINS. Mr. Chairman, I have been attending these hearings since Friday of last week, and I would like to make some observations, if I may, sir, before going ahead with my prepared statement, which has been prepared for several days. There are some comments that I feel I would like to present to the committee.

One piece of information that I would like to offer is in connection with a question to Congressman Coad. In Iowa in 1958 the dump energy sold to nonpreference customers totaled 198 million kilowatt hours, and the amount to preference customers would be in the neighborhood of 150 million. I do not have the exact figure with me.

There have been many suggestions that a new comprehensive water study be made, and I would like to add my support to this suggestion.

Many factors need to be considered in the light of a few years' operating experience that may have changed since the last comprehensive water study. It should certainly contain a realistic analysis of irrigation requirements, municipal water supply, and other uses.

At this point I would like to add my support to Senate Resolution 71. I think that is a real move in the right direction.

Also, I would like to add my support to the recommendation that a single administrative agency to manage the business of the Missouri Basin project would have many advantages over the multiagency, uncoordinated arrangement that exists today. Some improvement in coordination could be made under existing arrangement. For example, there are two regional offices of the Bureau of Reclamation managing power matters of the basin. It would certainly appear that one regional office would be sufficient with district offices to manage affairs in the field. Since the Bureau design and construction headquarters and also one regional headquarters are presently located in Denver, Colo. I would suggest that the committee consider consolidation of the two regional offices and make Denver the headquarters.

At the hearing Saturday morning a question was asked about how much nonfirm energy was being produced by main stem plants in the eastern division of the marketing area, and the chairman at that time requested that the information be put in the record. I have some information on that which I would like to present.

Mr. Walker, the regional power supervisor of the Bureau of Reclamation, Billings, Mont., office, presented in the August 27, 1958, Inter-Agency Committee meeting at St. Paul, Minn., the following information:

For fiscal year 1958, the Bureau sold 1,419 million kilowatt-hours, and that was sold at 2.84 mills per kilowatt-hour. This would indicate to me that there is a possibility of firming up relatively large amounts of power profitably to the Government.

Many witnesses have suggested that the O'Mahoney-Millikin amendment is not being adhered to. At the joint hearings before this committee and the Public Works Committee in May 1957, the Chief of Engineers indicated by letter that he did not consider that the O'Mahoney-Millikin amendment established any priority for water over navigation on the Missouri River, and that the purposes for which the projects are to be operated are defined by legislative authorization for specific projects.

He also stated that the primary purposes of the Missouri River reservoirs, as authorized, are flood control, irrigation, navigation and hydroelectric power. He quoted the following statement from Senate Document 247 as establishing the relation of power to other beneficial uses of water.

> Both agencies recognize the importance of the fullest development of the potential hydroelectric power in the basin consistent with other beneficial uses of water.

This is not the wording that the Coordinating Committee used in establishing their basis for the beneficial uses of water as a result of comments on the April 29, 1958, hearing in Omaha. There the wording is as follows:

> Hydroelectric power generation to the fullest extent consistent with other beneficial uses of water.

My question is, why has the word "potential" been dropped from the guide, and has this in any way detracted from the effort to provide the maximum amount of firm power?

I recognize that all broad operations, of course, must be conducted in accordance with broad guides of the congressional authorization. The Coordinating Committee's role is to insure that the year-to-year operations provide equitably distributed services to all the functions and interests for which these projects were authorized and constructed.

Now, some questions: How are the equities determined? What economic considerations are taken into account in determining equities? Is greater financial return to the Government in the sale of firm power one of the economic considerations used in determining equities? Does the Corps of Engineers make the determination of the amount of firm power that can be contracted for sale by the Bureau from the main-stem plants?

I would like to urge that the Bureau take immediate steps to negotiate with the Nebraska people for purchase of firm winter power as the question raised by you, Mr. Stong, and this would appear to be a means by which the Bureau could, I believe, certainly meet all of the 1963 requirements of the preference customers and perhaps the 1965 needs. Perhaps this committee can assist in bringing about such an arrangement.

I am speaking in the interest of our recently organized committee for Missouri River power representing all preference customers in western Iowa. Northwest Iowa Power Cooperative is a member of the Midwest Electric Consumers Association and is therefore concerned about the interests of all preference customers in the eight-State area comprising the Midwest Electric Consumers Association.

Other Iowa witnesses have testified relative to particular items that are cause for much concern among our preference customers. My testimony will be directed primarily in the area of our power needs and steps which I feel should be taken to assure increased quantities of power from the Missouri River system.

There are four G. & T. cooperatives, three distribution cooperatives, and 30 municipal systems who have applied for Missouri River power from the Department of Interior. This power will become initially available in 1961 and be almost fully developed by 1965. The instructions in the applications asked that requirements be listed for 1961, 1963, and 1965.

I would like to make an insert here, if I may, relative to the allocations made in 1954. Many of the rural electric cooperatives in Iowa and the majority of the municipalities who have applied for and received an allocation of power in 1958 were denied power at that time because no facilities existed to get the power to these customers in Iowa. Iowa badly needs an extension of the Federal transmission system in Iowa to bring that about. There are only about 20 miles of Federal transmission line in Iowa.

Presently there are 12 distribution cooperatives in Iowa that are entirely dependent on the Missouri River powerplants for their power supply. Nine municipal systems receive Missouri River power, only one of which receives its entire supply. Three other municipal systems will receive a portion of their power needs from Missouri River plants in 1959. These preference customers had peak loads during

the peak load season of 1957–58 of about 53,000 kilowatts. All preference customers in Iowa who have applied for Missouri River power had a peak load during the 1957–58 peak load period of nearly 107,000 kilowatts. Power received from the Bureau was about half of the power actually needed.

The Iowa preference customers, who have applied for Missouri River power in response to the invitation by the Interior Department, will have loads conservatively estimated to total 185,000 kilowatts in 1965, the year all of the Missouri River power is expected to be available. The tentative basis announced by Assistant Secretary Aandahl on December 11, 1958, at Sioux Falls, S. Dak., indicates that Iowa preference customers can expect to receive about 126,000 kilowatts, or about 59,000 kilowatts less than needed to meet the load in the marketing area.

Many of us believe that there are existing means by which this condition can be corrected to a substantial extent. First, we believe that compliance with the O'Mahoney-Millikin amendment would conserve a substantial amount of water, now used for free-flowing navigation, that would produce much additional firm power needed to meet winter peaks. Second, we believe the Interior Department should pursue a policy of purchase and exchange with power suppliers of the area that is not limited to a maximum of power available during an average water year. The policy of the Secretary of Interior dated September 10, 1953, and approved September 14, states that determinations anticipate the purchase of thermal generated energy from available sources in the area to supplement energy available under average water conditions. It would appear there are opportunities to purchase and/or exchange that could be economically used to greatly increase the firm power available. We believe this should be done.

Another means of increasing the firm power is the construction of large thermal plants that could be operated in conjunction with the river plants. One plan would be for Congress to appropriate funds for construction of Federal steam plants. There are large quantities of lignite in the Dakotas which would no doubt provide ample low-cost fuel for operation of large steam plants. There are alternatives to this plan that should also receive consideration. Another plan that has been ably discussed is the possibility of slack-water navigation. May I add my support to the recommendations of Governor Loveless.

There is evidence that some substantial benefits might be available by interconnection between the Federal systems such as Bonneville Power Administration, Missouri River system-Colorado system and the Southwest Power Administration. The Interior Department has technical facilities for analyzing such a scheme and we believe it should be studied.

These are specific methods which could greatly increase the amounts of firm power that can be made available by the Bureau of Reclamation for the benefit not only of the preference customers, but of the Government also. We urge the committee to do all that it can to insure that these matters will receive prompt and thorough study and investigation and prompt action where the study and investigation demonstrates that any of these suggestions will produce these desirable results.

There is one further point that my board of directors has requested me to bring to your attention. It is covered by a resolution of my board adopted on November 25, 1958. And if I may, I should like to present a copy of this resolution for inclusion in the record.

Senator NEUBERGER. That may be done.

(The resolution referred to follows:)

RESOLUTION OF THE NORTHWEST IOWA POWER COOPERATIVE

Whereas the United States has now completed and is constructing further hydroelectric installations on the Missouri River, and the transmission facilities and capacity related thereto; and

Whereas this cooperative and other preference customers of the United States are entitled under act of Congress approved June 17, 1902 (32 Stat. 388), the acts of Congress approved December 22, 1944 (58 Stat. 887), and acts amendatory thereof or supplementary thereto, and other statutes of the United States to preference in the use of such energies and facilities; and

Whereas these preference customers by paying firm rate for energy are the principal source of funds to repay the entire cost of such Missouri River development; and

Whereas the residual or "excess" capacities in such transmission lines and facilities are of great and valuable importance in making feasible and economical the maximum utilization of the benefits of the hydroelectric installations to the preference customers under the laws of the United States; and

Whereas the intelligent and efficient use of such facilities require that such preference customers should have readily made available to them full information as to proposed plans and contracts of the Bureau of Reclamation; and

Whereas the United States Bureau of Reclamation has in the past, entered into contracts with other than the preference customers before the preference customers were aware that such plans or contracts were contemplated: Now therefore be it

Resolved by Northwest Iowa Power Cooperative, That this cooperative demands recognition of its rights as a preference customer under act of Congress approved June 27, 1902 (32 Stat. 388), the act of Congress approved December 22, 1944 (58 Stat. 887), and acts amendatory thereof or supplementary thereto and other statutes of the United States to preference in use or purchase of the residual or temporary "excess" capacity and transmission or other facilities of the United States Bureau of Reclamation; and be it further

Resolved, That this cooperative and other preference customers similarly situated are entitled to make effective the preferences contained in the statutes of the United States to adequate and reliable advance information as to any proposed contract, board study, or any other material compiled or contemplated by the U.S. Bureau of Reclamation relating to the use, capacity, or availability of service of the hydroelectric generating and transmission facilities of the United States, operated by the Department of the Interior, Bureau of Reclamation; and be it further

Resolved, That this cooperative request the assistance of the National Rural Electric Cooperative Association, the Iowa Rural Electric Cooperative Association, and Midwest Electric Consumers Association, to help in securing the rights of this cooperative and other preference customers; and this cooperative further requests information and suggestions from these bodies as to appropriate methods and procedures to secure these rights; and be it further

Resolved, That copies of this resolution be directed to the National Rural Electric Cooperative Association, the Iowa Rural Electric Cooperative Association, and Midwest Electric Consumers Association, and that the secretary of this cooperative be authorized to authenticate such resolution by affixing the seal of this cooperative thereto, and signing a certificate of authenticity thereof.

Mr. CAULKINS. The reason for and the gist of the resolution is this: The Department of the Interior will sometimes take final action affecting us without giving us the benefit of the facts and its plans for taking that final action. This is no way for a department of the Government to act. We believe that before any final action in any matter affecting the preference customers is taken, the proposed action

and the facts upon which it is based, should be made available to the preference customers and they should be given the opportunity to present any facts, ideas, and suggestions which they have. Only in that way can the Department of the Interior be certain that it has explored all possibilities, considered suggestions, and have the benefits of all of the facts. We, therefore, urge you to do what you can to consider that henceforth this procedure that we are suggesting be followed by the Department of the Interior.

It is our strong belief that if the suggestions that we are making are followed, it will be to the mutual benefit of all concerned—to the benefit of the Government, the preference customers, and our Nation as a whole.

Thank you very much for giving me the opportunity to appear before you.

Senator NEUBERGER. Thank you, Mr. Caulkins.

I was particularly interested in your suggestion where you recommended an interconnection between the various Federal systems. I think you might also have included the Federal system in the Central Valley of California. In the Pacific Northwest many of us feel that because of facts of climate and geography different rivers peak at different times. For example, the Columbia, which is the greatest source of power in the country, is a phenomenon, because its maximum flow at the Canadian border is about 11 times its minimum flow. Over a third of the river originates in Canada. Naturally the melting season in subarctic is at a vastly different time than the melting season far off to the south in the Rockies where the Missouri River originates. Conversely, it is quite different from what it is in the Sierra Nevada Range of California, where some of their rivers in the Central Valley area, like the Feather River and the Sacramento River, have their headwaters. We have thought if these various systems could be interconnected, it would be to the advantage of all of them, because the lean season for one might be the harvest season for another as far as kilowatts are concerned. I am very pleased you have suggested this. As I say, I, myself, would add the Central Valley of California, because it might be a more efficient use of all these waters. Do you have any questions, Mr. Stong?

Mr. STONG. Mr. Caulkins, you stated the belief that the Interior Department should exchange and purchase power to make firm power available so as not to limit the maximum of power available to the average water year. Is it your understanding that the allocation now being made in the Missouri Basin is then of firm power available on an adverse water year?

Mr. CAULKINS. I believe it is. I can quote further from this policy of Mr. Aandahl in 1953 which said as a minimum it would be 110 percent of the adverse year. Again getting back to having some discussion of plans with the Interior Department, we know of very little purchase that has actually taken place in the basin to even perhaps bring it up to an adverse year. Mr. Pafford of the Corps of Engineers is here and I am sure he would support my statement that since 1954 there has not been an average water year yield at Sioux City. Consequently, the firm power has been limited, and in my opinion the Interior Department has not lived up to the agreement

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that was made in 1953 in their power policy to try to bring about at least that minimum.

Mr. STONG. Was it not announced that 1,033,000 kilowatts of available firm power is the amount available in an adverse water year?

Mr. CAULKINS. I can't answer that for sure, Mr. Stong. I would guess that it must be based on that premise.

Senator NEUBERGER. Thank you very much, Mr. Caulkins, for coming here today.

Mr. CAULKINS. Thank you, sir.

Senator NEUBERGER. Our next witness will be Mr. Gus Norwood, executive secretary of the Northwest Public Power Association, with headquarters in Vancouver, Wash.

STATEMENT OF GUS NORWOOD, EXECUTIVE SECRETARY, NORTHWEST PUBLIC POWER ASSOCIATION, VANCOUVER, WASH.

Mr. NORWOOD. Thank you, Mr. Chairman.

Senator NEUBERGER. Before you commence your testimony, Mr. Norwood, I want to say that I have to leave at 11:45 because the name of a very distinguished resident of my State is on the executive calendar for confirmation today as one of our ambassadors overseas. I want to be present during that consideration. I just wanted to say now, in advance, that when I do have to leave the hearing room at a quarter to 12 I trust you will understand the reason therefor.

Mr. Stong or any Senator who is here in the interval will take over the hearing.

Mr. NORWOOD. Mr. Chairman, my name is Gus Norwood. For the last 11 years I have served as executive secretary of the Northwest Public Power Association which comprises 101 consumer-owned electric distribution systems of the five States of Alaska, Montana, Idaho, Oregon and Washington.

I have an extensive statement and three exhibits which I would like to present for the record, and I also have with me a statement by Mr. Lee Wooden, president of the Oregon Rural Electric Cooperative Association who regrets that he could not be here, and he wondered if his statement might appear in the record.

Senator NEUBERGER. Mr. Wooden's statement will appear in full in the record. Following his statement your exhibits will appear.

(The statement and exhibits referred to follow:)

STATEMENT OF LEE WOODEN, PRESIDENT, OREGON RURAL ELECTRIC COOPERATIVE ASSOCIATION

My name is Lee Wooden. I am president of the Oregon Rural Electric Cooperative Association and reside at Jewell, Oreg.

My purpose in appearing before this subcommittee is to reaffirm on behalf of the rural electric cooperatives of Oregon, the necessity of amending the Bonneville Act by creation of the regional corporation with more businesslike procedures. This includes, of course, the firm retention of the preference clause.

Practically all of the rural electric cooperatives in Oregon purchase power from the Bonneville Power Administration in accordance with the preference clause of the Bonneville Act and this in turn has enabled the local consumer-owned power distributors to pass on to their consumers the benefits of low-cost Columbia River power.

The cooperatives of Oregon strongly recognize the advantages inherent in a regional resource development corporation charged with responsibility for planning and executing comprehensive river basin development.

A subcommittee of the Senate Committee on Public Works recently concluded hearings in the Pacific Northwest on legislation to establish a Columbia River Development Corporation to achieve these advantages. The rural electric cooperatives of Oregon are fully in accord with the purpose of this legislation which is now being redrafted.

We are confident that the type of Columbia River Development Corporation bill which will soon be developed will not only include all of the sound, time tested concepts but which will discard those concepts which have impeded river basin development in our area, and which will provide us with a new organizational establishment upon which our future may be built.

Thank you.

CONSERVATION'S HUNDRED-BILLION-DOLLAR CHALLENGE

(Address to Theodore Roosevelt Conservation Conference, October 2, 1958, at Denver, by Gus Norwood)

The challenge we face is how to achieve the greatest good for the greatest number. By this measure we judge the stewardship of our public natural resources.

The thought behind this ideal originated a century before Theodore Roosevelt became President. Fairminded persons have for centuries attempted to apply this principle, like the Golden Rule, to the affairs of man.

The words themselves came into use early in the 19th century when a very fine Englishman, Jeremy Bentham, adopted them as his standard. His inquiring mind was shocked at the legal abuses of his time, and he surveyed existing institutions to see if they served the greatest good for the greatest number. He thus became the founder of the philosophical school of utilitarians.

When you and I define conservation as the wise use or utilization of natural resources, we, too, are utilitarians.

As utilitarians it disturbs us to see 5 million people unemployed. This is waste of human talents. As utilitarians it disturbs us to see the devastation of soil by erosion, the destruction of property and loss of life by floods and the loss of hydroelectric power in the uncontrolled and unharnessed rivers. Here is multiple waste of human resources and natural resources. The challenge is to apply our human talents to utilize the natural resources and thus convert these multiple wastes into multiple uses. We know where we want to go. How do we get there?

Let us relax a bit this afternoon by playing a game. The name of this game is banking. However, we will not borrow and lend the money of others as bankers do, but instead we will use our own money. As citizens of the United States you and I make up the credit of the Government. We are the ultimate bankers.

As citizens of the United States we play yet another role. We are the owners of the public natural resources. This is our Commonwealth.

In our dual role of proprietary owners and bankers we want to invest our money wisely to achieve the best use of the natural resources. Taking a page from the book of the bankers we prepare a prospectus telling who we are, what excellent management we have and why investing in conservation is a good business proposition.

In this prospectus our imaginary conversation begins with the question, How much money is needed? The answer cannot be found in Government reports. However, the Twentieth Century Fund in 1955 published a study on "America's Needs and Resources," which shows that we need $103 billion of investment in the next 50 years to develop just our land, forest, and water resources, and of this total we need $80 billion for water resources alone. The study indicates we should invest $2.6 billion a year the next 20 years and then taper down to about a billion dollars a year early in the 21st century. Comparing our present rate of conservation investment we find that the Twentieth Century Fund study is asking us to double our investment rate.

This obviously is a modest and conservative goal. A partial check is provided by Major General Bragdon, of the White House staff, who told the American Public Works Association last June that we have a shelf of State and local public works totaling $204 billion waiting to be built, of which $92 billion is for roads, $42 billion for educational facilities, $24 billion for sewers and waterworks.

General Bragdon stated that in 1957 we invested $14.5 billion in public works, of which the Federal share was $4.5 billion, or about 30 percent. This $14.5 billion is a mere 3.3 percent of our gross national product. It is rumored the Russians are plowing back 6 percent of their gross national product into productive public works.

General Bragdon urged that we at least double our public works investment. During the past 42 years he stated that we managed to meet the annual current need in only 4 years. On average we are building only 42 percent of the projects needed.

He shows further that in the past 20 years our civil public works have not been keeping up with the other indexes of national growth. While public works increased 258 percent as against 20 years ago, gross national product rose 393 percent, production of durable goods 466 percent, and new investment in plant and equipment 640 percent. Public works is seriously lagging.

General Bragdon makes an interesting point against the idea that public works investment should be stepped up as an antidepression measure. He points out that we need do no more than merely build at the rate of need. That in itself would represent more than a doubling of our present rate of public works investment.

Inherent in the general's speech, at least in my view, is the fact that our national economy is not merely a one-sided private-investment-only economy, but is a dual economy. Our axle of progress has two wheels, the wheel of private investment and the wheel of public investment. If one wheel is missing we make no progress. If the wheels are not properly matched as to size, we merely go around in circles. We need both kinds of investment to make maximum progress.

Now that we know how much money is needed, our prospectus must explain why. Some benefits, of course, are obvious, but skipping over these, we are here especially concerned with those benefits of conservation investment which are not so obvious. Many benefits are understated. We can raise our sights. The prospectus of conservation investment is in fact highly attractive because of the expanding economic horizons of conservation.

Using the Columbia River for purposes of illustration we can identify 12 factors which make for an expanding economic horizon. Each of these 12 points holds a promise that the benefits from conservation investment will increase.

The first factor is that upstream storage is the key to the control and fullest development of the water resources.

Physically the Columbia River is very large, the annual water crop being equal to that of 5 Missouri rivers or 10 Colorado rivers. Only the Mississippi River has a greater flow of water. But the Columbia is extremely erratic. Its greatest flood reached 35 times the record minimum flow. In contrast to this extreme flow of 35 to 1, the St. Lawrence River had never had a maximum flow that was as great as twice its record minimum flow. The reason for the steady flow of the St. Lawrence is the moderating effect of the upstream storage of the Great Lakes. In the Columbia we also need upstream storage to moderate the flow.

The Hungry Horse Dam high in the mountains of Montana is the perfect dam for the Columbia River. It provides the upstream storage for catching the summer floods and then releasing the water in winter when the river would otherwise be low and when power need is greatest. The Hungry Horse Reservoir swallows the floods. It makes good water out of bad water.

Hungry Horse Dam fits well the idea which President Theodore Roosevelt expressed in his 1901 message to Congress in these words:

"The forests alone cannot, however, fully regulate and conserve the waters of the arid region. Great storage works are necessary to equalize the flow of streams and to save the floodwaters. Their construction has been conclusively shown to be an undertaking too vast for private effort. Nor can it be best accomplished by the individual States acting alone. These irrigation works should be built by the National Government."

Upstream storage is the first factor in expanding the economic horizons of water conservation. Upstream storage is the key to controlling the river.

The second factor which makes our prospectus more attractive is more power. We can install more dams along the river, and we can install more generators at each dam, and we can operate those generators more continuously and with more assurance when there is plenty of upstream storage to level the flow of the river. This gives more power to do our work.

A third factor in our expanding horizon is the greater value of power. As the hydroelectric projects are combined with steam and atomic plants, the steam plants are operated to carry the base load while the hydro power is used for peaking purposes, which makes it more valuable. This is how TVA operates and how Los Angeles makes optimum use of power from Hoover Dam. Thus as a hydro system matures we can look forward to a greater value of power.

A fourth factor is the benefits of electrical integration. The 7,500 miles of transmission lines owned and operated by the Bonneville Power Administration throughout the Columbia River Basin illustrates the advantage of power pooling. It is the giant power idea of Gifford Pinchot and Morris Cooke come true. Electrical integration adds over a million kilowatts to the assured loadcarrying capacity of our system as compared to what the powerplants could do if operated on an isolated basis. The advantages of electrical integration are large and indisputable.

These four factors of upstream storage—more power, greater value of power, and electrical integration—are lifting the horizons of Columbia River development. In 1921 a Government study estimated a potential for the Columbia River of only 10½ million kilowatts. Now the figure is 35 million kilowatts and 50 million kilowatts is a long-range possibility. Ten years ago Ice Harbor Dam was planned for 270,000 kilowatts; now it is under construction with plans for ultimately 560,000 kilowatts, or more than double the original plans. Many other examples exist.

A fifth area of expansion of the horizon is the multiple-purpose idea. The building of a dam for one purpose makes other purposes possible. Better planning and a more logical and reasonable system of cost allocations will open new vistas of multiple-purpose benefits at future water projects.

Our sixth factor in the expanding economic horizon is one of the most important in this prospectus. The adoption of a longer economic service life for our dams is long overdue. We are not building Hoover Dam and Grand Coulee Dam for a mere 50 years. Unlike the famous "One Hoss Shay" these will not collapse in a cloud of dust when the 50 years repayment period is completed. On the contrary these huge concrete monoliths should outlast the pyramids of Egypt and the cathedrals of Europe. With silting no problem in the Columbia, these dams should last a thousand years and more.

China has a dam 4,000 years old. Peru has one 2,400 years old.

If the Federal Government were to adopt an economic service life of 150 years as compared to the present 50-year method, the benefit-cost ratio would jump 2.18 times. Here is a dramatic, yet plain commonsense expansion of our economic horizons. Senate Resolution 148, passed earlier this year, was a step in the right direction. The enactment of the Trimble bill is a much needed reform. With one bold stroke we can double the benefit-cost ratio of many future conservation projects.

The use of a longer economic service life also brings into the picture some long-range benefits which may not even be apparent during the first 50 years. For example, about three-fourths of the power benefits of Hungry Horse Dam are achieved at downstream dams, but only 12 of the ultimately 23 downstream dams are installed. When all are finished, the system benefits will double. Only a long-range investor like the United States can include such future benefits in its planning. Also the flood control and navigation and various other benefits increase with time. For example, navigation on the Tennessee River has increased 40 times and is still increasing.

During the Senate hearings on the Hells Canyon Dam and which resulted in Senate approval of the Hells Canyon Dam, we testified for a higher benefit-cost ratio. Significantly the Senate committee increased the original Army benefit-cost ratio of 1.31 to 2.37. Actually a 5 to 1 ratio appears entirely reasonable. A realistic analysis shows we can buy all three of the Idaho Power Co. dams when completed, salvage the machinery, build the high Hells Canyon Dam and at the end of even a more modest 100-year economic service life, we can have a billion-dollar profit lying in the United States Treasury.

The seventh of our dimensions also carries much weight. This is the leverage of low interest rates in facilitating the economic feasibility of projects, in achieving low-cost power and in achieving the fullest development of the potential of the resource.

This can be illustrated by means of the Hungry Horse iceberg. When we look over the operating statement for the Hungry Horse Dam we find about $3 million a year to cover the costs, but very little of that money is spent at the dam.

The entire cost of operation, maintenance, and administration at the dam is only $290,000 a year. This is 10 percent of the total. Thus when we visit the dam and see the operators at the control panels and when we watch the men doing the painting and maintenance and in fact all the activity that we can see at the dam, we see only the upper 10 percent of the iceberg.

The huge 90 percent that is left of the iceberg is underneath. In order to see how the other 90 percent is spent we must go to Washington, D.C., where once a year possibly while everyone else is out for coffee, a bookkeeper makes an entry of $900,000 for amortization. This repays the United States Treasury loan over a 50-year period. Next he enters $1,800,000 for interest. Thus in a very few minutes he has spent a total of $2,700,000 or 90 percent of the annual cost of Hungry Horse Dam, of which 60 percent is interest and 30 percent principal.

Interest is the chief factor in determining the price of power. With interest at 2½ percent, we can easily figure out by dividing 2½ into 60 that each 1 percent of interest cost causes 24 percent of power cost. The leverage is 24 to 1. If we had to pay 3½ percent at Hungry Horse Dam, the 1 percent increase in interest would require raising power rates by $720,000 a year.

Hungry Horse Dam was never proposed for private-utility construction because the use of traditional private-utility financing would have tripled the cost of power. The use of Federal financing not only achieved full development of the site and a present low power cost but also opened the door to vast future benefits as more downstream dams are constructed.

Since no banker could have financed Hungry Horse Dam as a private project, the project was either going to be built by the United States or not be built at all.

Hungry Horse Dam well illustrates Abraham Lincoln's philosophy of government when he says:

"The legitimate object of government is to do for the people what needs to be done, but which they cannot, by individual effort, do at all, or do so well, for themselves."

Incidentally it has been said that if a private utility had built Hungry Horse there would have been considerable tax benefits. Of course this is a fallacy. Under private financing there would have been no project and the tax payment would have been zero. As it is, the Hungry Horse Dam, while itself not on the Flathead County tax rolls, has created much tax base. Flathead County's tax base from 1946 to 1956 has jumped from $35 million to $84 million, an increase of 140 percent. New industries and lower power costs have benefited Montana generally while the flood control and the downstream benefits have benefited the downstream States. However, the object lesson of this case study in the leverage of low interest rates is that with the credit of the United States Government the Hungry Horse Dam was built, while without that credit it would not exist.

This is the type of dam which warrants the use of public credit. Furthermore the Columbia River Basin needs 16 Hungry Horse Dams to do the power and flood control job. We are 20 percent along the way to the goal and have 80 percent of the work still ahead of us.

One twin brother of Hungry Horse Dam is the ill-fated Hells Canyon. There too about 60 percent of the annual cost would have been for interest. No private utility has ever proposed to build either dam. These are the kind of critical projects which depend on public financing or they simply will not get built. This suggests a lesson which warrants separate identification as one of the new horizons of conservation.

The eighth factor is the goal of full development. It should be our purpose to achieve the optimum package of public benefits obtainable from the development of a resource. This was and is the issue in the Hells Canyon case.

This lesson might be called the Hells Canyon principle and might be stated in this way: When the full development of a critical natural resource such as a damsite, cannot be achieved by other financing means, and if the full development can be achieved only by means of the leverage of Federal financing, then the Congress should insure such full development by Federal financing.

Let me restate this. The Hells Canyon principle states that when full development can be achieved only by means of Federal financing then Federal financing should be used.

The Hells Canyon principle is merely a specialized application of Abraham Lincoln's statement of the legitimate object of government.

No. 9 in our list of 12 promising factors in the improved economic outlook for conservation is the subject of indirect benefits. Indirect benefits is a little-known field of project economics. We know there are considerable side effects from these large projects. The Bureau of Reclamation has issued a bibliography

on the subject of indirect benefits. Irrigation projects best illustrate such benefits because the Bureau often starts with a pure situation where it places water on the desert and can then measure all the benefits, both direct and indirect. It has shown cases where indirect benefits have been many times the direct benefits. A source in Ontario, Canada, states that the addition of a kilowatt of generating capacity ultimately results in a $2,500 increase in the wealth of the economy. We do know that the Federal power programs in the Tennessee Valley and in the Pacific Northwest have stimulated those respective economies so that they now provide a larger percentage of Internal Revenue collections than they did a quarter century ago. As a rule of thumb indirect benefits are probably at least as large as direct benefits. Much more research is needed in this field.

Point No. 10 which increases the attractiveness of our conservation prospectus is the inflationary effect on the future worth of conservation investment. This is an obvious point. Grand Coulee Dam cost $190 million and is now easily worth $600 million or three times as much; but for power rate purposes it is still on the books at $190 million. At such public enterprises the inflationary effect accrues in favor of the public rather than in favor of some outside monopoly.

The eleventh factor which may legitimately be given consideration by the Nation is the speculative rise in land and resources values. Everyone knows how Manhattan Island was purchased for $24 worth of trinkets. Today it is worth billions of dollars. Some of the increase in values is due to the compound interest effect. Much is caused by the pressure of people upon resources and facilities. The combined effect is what the late American economist Henry George calls the speculative advance in land values.

Future rise in land values should be given consideration in conservation investment planning as an argument for making early acquisition of land for public projects. The Government especially must take all these long-range effects into account.

The twelfth and last of our expanding economic horizons of conservation is the fiscal policy benefits.

There may be many fiscal policy benefits and they may be different at different times. The goal of full employment is a critical goal in time of depression. That creates the opportunity of putting people to work on conservation investment projects and in effect paying them at least in part with money that would otherwise be paid out as unemployment compensation anyway, with no appreciable benefits to the public as a whole.

Another fiscal policy benefit may be to check monopoly or to provide a regulatory yardstick or competitive factor where a monopoly has gotten out of hand.

Finally it may be a goal of fiscal policy to throw in a shot of public investment as an offset to other changes in the economy in order to maintain the economy at a high level of performance.

This completes our 12 factors in the improved economic outlook for conservation investment. Within the limits of our Columbia River experience our citizen owner can hand to the citizen banker a glowing prospectus setting forth a full dozen attractive reasons why public investment in conservation has not only the usual sound justification but in addition has these 12 points of superiority.

These 12 factors open new vistas. They raise our sights.

These 12 factors substantially raise our conservation horizons all around. They are like the 12 points of the zodiac around the horizon. Let us name them: (1) upstream storage; (2) more power; (3) greater revenue from power; (4) electric integration benefits; (5) multiple purpose benefits; (6) longer economic service life; (7) leverage of low interest rates; (8) the full development goal; (9) including the indirect benefits; (10) inflationary effect; (11) speculative rise in land and resource values; and (12) fiscal policy benefits.

These 12 factors indicate that the traditional benefit cost ratios used by Congress grossly understate the real benefits of conservation investment. We need some drastic reforms in our methods of economic evaluation and in our programs for administering and financing conservation.

Four major steps are recommended for early consideration and action by Congress:

First, since the Government of the United States does not have a long-range conservation investment program and must itself rely on such private sources as the Twentieth Century Fund for such information, it is recommended that Congress order the preparation of a long-range conservation investment program.

Presumably this will be a program of about $100 billion spread over a 50-year period and with an initial doubling of our present rate of such public investment to a level of about $2.5 billion per year for at least the first 20 years.

Second, Congress should instruct the Council of Economic Advisors or similar agency to institute a long-range investigation of the economic effects direct and indirect, present and future, of conservation investment.

These 12 expanding economic horizons of conservation are suggestive. Congress should have the economic research done in order to find out what does happen when a dam is built. What is the impact on gross national product?

The United States Senate has already taken exception to the continued use of the Bureau of the Budget circular A–47 and of the interagency Green Book. But the Congress does not have adequate information to formulate new guidelines for the project planning agencies.

The problem is rendered even more difficult by the tremendous propaganda and lobbying pressure of the private electric monopoly corporations to stop the Government of the United States in the field of hydroelectric development, just as the huge timber syndicates oppose any expansion of the Forest Service.

Third, Congress should adopt a capital budget so that the public and the Congress can distinguish between long-range capital investment on the one hand and on the other hand the current expenses.

Senator Wayne Morse has introduced a bill for establishment of a capital budget. Senators Douglas and Anderson and Magnuson are among those who have also advocated this basic reform. This bill should be given early hearings.

Fourth, Congress should consider the reorganization of the Department of the Interior into a Department of Conservation or Natural Resources.

As long ago as 1937 the Brownlow Committee on Administrative Management recommended to President Roosevelt the creation of a Department of Conservation and suggested that it have the following functions:

"To advise the President with regard to the protection and use of the natural resources of the Nation and the public domain.

"To administer the public lands, parks, Territories, and reservations, and enforce the conservation laws with regard to public lands and mineral and water resources, except as otherwise assigned."

Twelve years later, in 1949, Commissioners Dean Acheson, James H. Rowe, and James K. Pollock, as members of the first Hoover Commission on Organization of the Executive Branch of the Government, filed a 28-page minority report recommending conversion of the Interior Department into a Department of Natural Resources. Generally they urged that land, forest, and water conservation shuold come under the same umbrella.

Congress should promptly take these four steps. Congress should prepare a long-range conservation investment plan. It should order research on economic effects. It should adopt a capital budget. It should create the Department of Natural Resources. These reforms should insure that the Government of the United States will provide effective leadership in the achievement of the conservation ideal of the greatest good for the greatest number.

Thank you.

A Consumer Power Policy

Revised and adopted November 6, 1957, by the Northwest Public Power Association

Your legislative committee respectfully submits this recodification of Northwest Public Power Association resolutions as taken from the minute books covering 86 business meetings the past 17 years. Some 280 resolutions have been consolidated into a draft about one-tenth the original bulk.

The consumer-owned electric systems of the Pacific Northwest have a public utility responsibility to serve two million people with an abundant supply of electric energy at the lowest possible cost, consistent with sound business practices and with comprehensive development of natural resources. These four goals occur repeatedly in the resolutions. Because they appear as four sides of a unified, consumer-minded policy, we are submitting as a suggested title for this report "A Consumer Power Policy."

The local consumer power system has been created by the citizens of the community for the express purpose of supplying adequate electric power, when and where it is needed, at the lowest rates consistent with sound business principles.

Being consumer-owned, its customers and its stockholders are one and the same, with the result that it has one master and one loyalty—the community and its citizens.

With no conflict between consumer and stockholder, and with direct control of operating policy by the people it serves, the local consumer-owned power system is in an unequalled position to serve the community.

All Americans, as consumers and citizens—laborers, farmers, housewives, manufacturers, bankers, merchants—have a fundamental interest in the production, distribution and utilization of the power resources of our Nation. Abundance of low cost electrical energy or its scarcity and consequent high cost affect the standards of living of all, and the productivity and strength of our Nation itself. It is so vital to all our citizens, to a full production economy, and the national welfare that the assurance and provision of an abundant supply at lowest possible cost is a public responsibility.

Assurance of an abundant supply requires the prompt and orderly development of our Nation's power resources. Assurance that the American public will receive the undiminished benefit of such development requires a positive program of public generation, transmission, and distribution reaching all the way to the public, whenever and wherever necessary.

I. MOTTO OF THE NORTHWEST PUBLIC POWER ASSOCIATION

To provide the best possible electric service at the lowest possible cost consistent with sound business principles.

II. ONE-CENT POWER ACHIEVEMENT AWARD

Resolved that the membership authorize a utility award for those Pacific Northwest consumer-owned utilities whose average residential rate for any calendar year is 1 cent or less per kilowatt-hour. For calendar year 1956 there were 19 qualifying utilities:

Vera Irrigation District
Selem Electric
Milton-Freewater
Northern Wasco PUD
Tillamook PUD
Grays Harbor PUD
Cowlitz PUD
Grant PUD
Clatskanie PUD
Lakeview L. & P. Co.
Forest Grove
Canby
Monmouth
Tacoma
McMinnville
Drain
Cheney
Grand Coulee
Cascade Locks

III. AWARD FOR ENGINEERING ACHIEVEMENT

To encourage the most efficient operating practices and excellence of engineering in electric generation, transmission, and distribution, and in order to honor the foresight, abilities, and contributions to the ideals of consumer-owned power systems of Mr. McGuire, we hereby establish the Milton Hunt McGuire Engineering Achievement Award.

IV. PURPOSES OF THE NORTHWEST PUBLIC POWER ASSOCIATION

Consumer-owned electric utilities must stand and work together so our operations will be outstanding and successful.

This organization shall assist consumer-owned electric systems of Oregon, Washington, Idaho, Montana, and Alaska to interchange ideas and experience for their mutual benefit.

Article II of the articles of incorporation reads—

"That the purposes for which this corporation is formed are as follows:

"(a) To form a nonstock, nonprofit corporation for the purposes of rendering to such consumer owned and operated electric light and power utilities in the States of Idaho, Montana, Oregon, Washington, and Alaska as may subscribe, technical, legal, accounting, financial, purchasing, and other service and counsel peculiar to the operation of electric utilities;

"(b) To advocate and promote the highest possible efficiency in organization and operative methods of local consumer-owned electric utilities;

"(c) To render assistance and service in the defense of, or the promotion of, any interest common to its members;

"(*d*) To educate its members and the public in the principles and policies of consumer ownership and operation of electric ligh and power utilities; and to safeguard the principle of home rule;

"This corporation is one which does not contemplate pecuniary gain or profit to the members thereof."

V. CONSERVATION AND DEVELOPMENT OF NATURAL RESOURCES

Second only to the development and protection of its human resources, the Nation's foremost task is the conservation of its natural resources. Conservation is the wise use of resources to achieve the greatest good for the largest number of people for the longest time.

All feasible power resources, hydro, or other, must be developed as rapidly as they can be soundly undertaken.

River basins should be developed not only for power production but in accordance with comprehensive, basinwide plans which will assure optimum soil and forest conservation, flood control, reclamation and irrigation of land, improvement of navigation, municipal and industrial water supply, abatement of pollution, protection of fish and wildlife, expansion of recreational and cultural facilities, salinity and silt control, and other benefits. Such development can be assured only under public control and with the widest practical participation of local public agencies and cooperatives. Outstanding private licenses to exploit the public's hydroelectric power resources should be recaptured as rapidly as possible.

The Federal Power Commission should grant no license to construct a dam if such project would be inconsistent with comprehensive development of the river basin.

We urge a continuing investigation of hydro sites and studies of load growth to insure sound planning of an adequate supply of power. We urge the Corps of Engineers to review its 308 reports every 5 years.

We favor a positive program for the conservation and development of fisheries, wildlife, and recreational resources of the Pacific Northwest and Alaska. We urge Congress to investigate the adequacy and appropriateness of the fisheries research of the U.S. Fish and Wildlife Service as these relate to water resources development in the Pacific Northwest.

VI. HIGH HELLS CANYON DAM IS EXCELLENT PROJECT

We endorse the High Hells Canyon Dam as essential to the comprehensive development of the middle reaches of the Snake River on a multiple-purpose basis for flood control, power, navigation, irrigation, recreation, and other purposes, including river control and downstream power benefits. We favor construction by either the Corps of Engineers or the Bureau of Reclamation under legislation patterned after the Hungry Horse Project Act with power to be marketed under the Bonneville Act. We endorse S. 555.

VII. FLOOD CONTROL AND POWER GO HAND IN HAND

Historically the maximum summer flood peak of the Columbia River is 34 times the minimum winter flow. On average 73 percent of the annual runoff occurs in the 6 summer months but only 27 percent of the flow occurs in the 6 winter months when consumers use the most electricity.

The Pacific Northwest urgently needs upstream storage projects such as Hungry Horse Dam to store wasteful summer floodwaters for release in winter when Columbia River flow is lowest and when power need is greatest. Upstream storage thus serves the double purpose of flood control and power.

We urge Congress by law to define and authorize the upstream flood control and power storage objective for the Columbia River so as effectively to cut in half the record 1894 flood of 1,240,000 cubic feet per second at the Dalles to about 600,000 cubic feet per second.

We oppose the diversion of the Columbia River into the Fraser River. Instead we urge Congress to initiate early negotiations between Canada and the United States looking toward the full development of the Columbia River as a unit for the highest benefit of the people of both nations.

VIII. INCREASING THE POWER SUPPLY TO MEET DEMANDS

Federal hydroplants: We endorse the principle of comprehensive development of water resources and support dams which meet this test. We oppose dams which violate this principle. Under this principle the association has endorsed for construction by the Federal Government 39 dams with a capability of about 16 million kilowatts as follows:

Under construction

Ice Harbor	Chief Joseph	Cougar
Yellowtail	Palisades	Fort Peck No. 2
The Dalles	Hills Creek	
McNary	John Day	

Completed

Hungry Horse	Dexter	Eklutna
Detroit	Chandler	Anderson Ranch
Big Cliff	Albeni Falls	Roza
Lookout Point	Canyon Ferry	

Proposed projects

Hells Canyon	Upper Scriver	Eagle Rock
Glacier View	Lower Monumental	Blue Lake
Little Goose	American Falls power-	Lower Scriver
Lower Granite	house	Green Peter
Devils Canyon	Libby	Burns Creek
Bruces Eddy	Paradise	Swan Lake (in Alaska)
Penny Cliffs	Nez Perce	

The Middle Snake River area offers the greatest promise for upstream power and flood control storage available in the U.S. portion of the Columbia River Basin. There is a real need for an adequate study of its ultimate potential uses.

To fill this need we recommend that Congress direct the Corps of Engineers to conduct an immediate and thorough investigation and study of the Middle Snake River and tributaries from below the mouth of the Clearwater River to Weiser, Idaho, and to submit to Congress by December 31, 1959, a report with recommendations for the full, ultimate, comprehensive, multiple-purpose development thereof as part of the full development of the water resources of the Columbia River Basin, including an analysis showing the relationship to fisheries and other conservation values, and that, pending action by Congress on this report, no new dams may be built and no new licenses may be granted by the Federal Power Commission in this area.

We endorse in principle the Paradise Dam bill.

Non-Federal hydro plants: We urge Federal support toward expeditious construction of non-Federal public dams, including among others Sultan Dam, Priest Rapids project, Skagit River projects, and the Cowlitz Dams at Mayfield and Mossyrock. We have supported two dams now completed, Box Canyon Dam and redevelopment of Rock Island Dam.

The only dams opposed by the Northwest Public Power Association are the small alternative projects which would conflict with and prevent construction by the Federal Government of the Paradise, Nez Perce, and High Hells Canyon Dams and result in gross underdevelopment of the potential waterpower thereby violating the principle of comprehensive development. The officers of the association are authorized to intervene before FPC in opposition to such alternative projects.

Federal steamplants: We recognize the authority of the Congress to build fuel-burning generating plants. Under this principle we have endorsed the Fulton steamplant for TVA. We also favor Bonneville Power Administration building 400,000 kilowatts of fuel-burning electric plants.

Federal atomic generating plants: We urge the continued public control by the Government of the United States over atomic energy and we also urge Congress to authorize the construction of Federal atomic electric generating plants.

IX. FEDERAL LAWS ESTABLISH MARKETING PRINCIPLES

The high water mark of Federal hydroelectric legislation is section 5 of the Flood Control Act of 1944 which sets forth four historic principles:

(*a*) To encourage the most widespread use of electric energy.
(*b*) At the lowest possible rates to consumers.
(*c*) Consistent with sound business principles.
(*d*) With preference to public bodies and cooperatives.

X. PREFERENCE CLAUSE FAVORS LOCAL CONTROL

We recognize the so-called preference and priority clause of the Federal power statutes as a home-rule clause which preserves the right of home rule for cooperatives and local units of government. Since the rivers of the Nation belong to the people, it is fitting that the public should have first call on publicly generated electricity. As the owners of the waterpower the general public has the right to the undiminished benefits of the resultant energy at cost and without the imposition of private utility toll charges and monopoly control.

XI. SOUND ENGINEERING LEADS TO SOUND INVESTMENT

A sound Federal power program requires a close coordination of three factors:

(*a*) Continuing load studies: To provide careful estimates of future electrical loads including not only predictable loads, but also contingencies and operating reserves.

(*b*) Engineering studies: To plan the construction of facilities for generating and transmitting power and delivering it at each load center at the proper voltage when needed.

(*c*) Congressional appropriations: To advance capital investment to build facilities to meet energization dates.

If the load studies and the engineering studies are sound, we believe that the appropriations should follow as a matter of course and as a matter of sound business investment.

Greatest economy and most effective use of power supply require interconnection of the various electric powerplants within a region and their connection with the various load centers of the region by means of high voltage transmission lines. These transmission lines are the essential "generator to market" roads without which limited groups can bottle up a Federal dam and by such monopoly render it a captive dam whose power must be sold at sacrifice prices. The carrying out of the Federal power statutes and in particular the preference or anti-monopoly clause depends primarily upon Federal transmission lines.

XII. FEDERAL TRANSMISSION LINES TO CARRY OUT THE LAW

We urge Congress to construct transmission and substation facilities to integrate Federal power projects to achieve maximum firm power and to transmit such power to the load centers of public bodies and cooperatives at their required voltage.

Specifically we urge the construction of transmission lines from Fort Peck Dam to Yellowtail Dam to Canyon Ferry Dam to Great Falls and Anaconda. We are in favor of a Federal 230,000-volt line to Klamath Falls, the 230,000-volt Kitsap cable, a line from McNary Dam to the High Hells Canyon damsite and a line through southern Idaho to interconnect with Anderson Ranch Dam, Milner Dam, Minidoka Dam, American Falls Dam, Palisades Dam, and Anaconda.

We oppose the sale of energy from Federal projects at the bus bar. We oppose any legislation to permit marketing of energy by the Federal Power Commission.

We favor the policy of Congress in limiting the marketing authority of Federal agencies to wholesale accounts. Furthermore, we believe that no Federal marketing agency should sell power to private industries within the distribution area of any public body or cooperative unless expressly requested by such public or cooperative body.

We urge Congress to enact legislation and we urge the Federal administrative agencies to permit no power sales or exchange contract nor grant any easement, license, or right-of-way over public lands to any electric company unless said company agrees to make available the excess capacity of its transmission system for wheeling to preference customers.

XIII. ELECTRIC POWER AT COST

We favor financing of Federal power facilities on a self-liquidating basis providing for repayment of power investment together with interest over a 50-year period on a modified service life basis.

We oppose any unjustified increases in power rates over those necessary to meet actual costs. Many schemes have been advanced for artificially increasing power rates, including the criteria and ground rules used by various Federal agencies.

We urge Congress to establish uniform criteria for evaluating multiple-purpose power projects based on actual anticipated service life of each category of investment as set forth in "Bulletin F" of the Bureau of Internal Revenue including 150 years service life of dams. Specifically we urge that these criteria be applied uniformly for: (*a*) Depreciation, (*b*) accounting, (*c*) benefit-cost ratio, (*d*) allocation of costs, and (*e*) for determining and insuring full river basin development.

We oppose increasing power rates by the levy of additional taxes. We oppose any taxes on interest from electric revenue bonds. We oppose taxation of government at any level by government at any other level. We believe an electric utility is not a proper tax collecting device, particularly for hidden taxes. We likewise oppose the imputation of taxes or the use of "taxes foregone" in evaluating proposed Federal hydroelectric projects. No dam or utility pays taxes, only the consumers pay taxes.

We oppose the proposal that Federal agencies owning downstream dams pay upstream storage charges to private utilities. We urge retention of section 10(f) of the Federal Power Act as it now stands. We urge FPC to expedite its determination of downstream benefits due in the Columbia River Basin.

We favor a rate of interest at Federal projects equal to the average cost of money to the Government. When national considerations delay a project, the excessive interest during construction should not be included as a cost.

We urge Congress to investigate the Nation's monetary policies and the causes of high interest rates.

The cost allocations at McNary Dam are unreasonable. Navigation has been grossly underevaluated.

We endorse the principles of the Trimble bill regarding cost allocations and other factors in Federal power rates.

We favor amending the Bonneville Act to permit the Administrator to purchase power under contract and under appropriate standards in order to increase firm power supply provided that no steampower should be bought unless it can be merged with hydro and sold without increasing the average system power cost or can be sold on a reimbursable basis.

No power should be sold outside the region without the right of first refusal at the same rate within the region.

We urge Congress to provide for reimbursement of consumer-owned electric systems when they must move poles incident to highway construction.

We favor amendment of the Federal Administration Procedure Act to insure the right of public hearings and court review relative to cost allocation and rates.

We adopt the 5-page report dated April 11, 1956, of our Wholesale Rate Committee in commenting on the Ford, Bacon & Davis report on BPA rates.

XIV. SUPPORTING IRRIGATION

We endorse a positive irrigation program in the Pacific Northwest as required by national demand for agricultural produce, provided that when any capital costs of such projects, which are beyond the capacity of the water users to pay, are to be subsidized from power, the following principles and policies should be observed, especially in any proposed legislation for a Columbia Basin account:

(*a*) Irrigation projects shall not be authorized unless each project shows a clear feasibility when direct and indirect benefits and costs are evaluated.

(*b*) In evaluating benefits Congress shall limit the inclusion of indirect benefits up to the point of equaling the direct benefits.

(*c*) The water user shall be required to reimburse the Government for the Federal costs in a ratio not less than the direct benefits bear to the total benefits.

(*d*) The subsidy from power is to be limited to that portion of the irrigation cost which the indirect benefits bear to the total benefits.

(*e*) Any subsidy to irrigation shall not increase power rates during the 50-year period for repayment of power investment. The payment shall be made commencing after the 50th year of project completion.

(*f*) No subsidy shall be assessed against existing projects except as already provided by law.

(*g*) No subsidy shall be allowed for irrigation operation, maintenance and administrative costs.

(*h*) Power used for irrigation shall be charged at cost.

(*i*) When power users must subsidize irrigation, it is our view that the interest on the related power investment shall be likewise credited toward repaying irrigation investment.

(*j*) We oppose any increase in Grand Coulee power cost for the purpose of subsidizing irrigation projects other than the presently authorized Columbia Basin project.

XV. REGIONAL POWER AGENCY ENDORSED

To open new avenues of agricultural and industrial opportunity and to provide increased employment for an expanding population by accelerating the rate of power development, we urge that Congress create a regional public organization to carry forward the Northwest power program on a basis of assuring (1) an adequate power supply, (2) at the lowest possible rates, and (3) consistent with comprehensive development of the water power resources of the Pacific Northwest. Specifically, we endorse the sixth preliminary draft of the Bonneville Act Amendments bill, which provides, in addition to the above, for adoption of the following:

(*a*) Retention of the principles of the Bonneville Act.

(*b*) Adoption of capital budgeting under the Government Corporation Control Act.

(*c*) Adoption of actual service life for projects.

(*d*) Permit the Corporation to use its own revenues.

(*e*) Impose upon the Corporation a public utility responsibility for providing an adequate regional power supply.

(*f*) Establish the Corporation as the marketing agency for power from all Federal dams in Montana, Idaho, Oregon, and Washington.

(*g*) Use interstate compact so the four States may take over the Corporation or elect four of the five directors.

(*h*) Corporation succeed to Bonneville Power Administration.

(*i*) Issuance of revenue bonds.

(*j*) Use of tentative cost allocations.

(*k*) Provision for congressional control over new projects.

Our interest in a regional power agency is of long standing. On the date it was founded, January 31, 1941, the Northwest Public Power Association adopted its first resolution to urge Congress to form a "Federal nonprofit corporation for the wholesale marketing of Columbia River power; that the control of policies and management * * * be vested in a board of directors (of which) a majority * * * shall be appointed by public bodies operating power systems and the balance to be appointed by the Federal Government."

We endorse the Kerr bill for TVA self-financing.

We oppose the present draft of the proposed interstate compact involving the control or allocation of electric power in the Pacific Northwest.

We endorse the Hoover Commission recommendation to transfer navigation and flood control functions of the Corps of Engineers to the Department of the Interior. We further urge that the Department of the Interior be reorganized as the Department of Natural Resources.

XVI. RURAL ELECTRIFICATION SUPPORTED

We urge Congress to make available appropriations for use as capital loan funds to REA borrowers including loans for generation and transmission cooperatives, and adequate funds for administration and for research in power use.

We urge amendment of REA Act to permit a 50-year repayment period when funds are used for longer life projects.

We urge Congress to enact legislation to restore REA to the status of an independent agency.

We oppose the Hoover Commission recommendations to abolish the Rural Electrification Administration and transfer its functions to a Government cor-

poration which would borrow its funds by the sale of long-term bonds. We oppose any attempt to increase the REA interest rate above the present 2 percent level.

We commend the rural electric cooperatives and utility districts of the Pacific Northwest for doing a fine job of rural electrification serving the people whom the private utilities refused to serve. For these same private monopoly corporations now to turn upon these cooperatives and utility districts and pirate their better consumers is outrageous.

We endorse the right of our cooperatives and districts in serving any and all electric consumers or potential consumers in their chosen service area. We deplore the delivery of any Federal power to any private utility for the purpose of pirating consumers from a consumer-owned electric distribution system.

XVII. REGULATION OF PRIVATE UTILITIES IS TOO LAX

We recognize that private electric companies in performing public utility functions are operating as monopolies under special privileges granted by the various units of government. They are given governmental power to condemn private property; they are granted franchises and certificates of convenience and necessity and are given the use of highway right-of-way.

We recommend that the Congress order a searching investigation of the electric utility industry in the following respects:

(*a*) To determine the effectiveness of Government regulation.

(*b*) To determine the extent of propaganda, political, and lobbying activity of the private electric companies.

(*c*) To determine the efforts being made by the companies to thwart and discredit consumer-owned electric systems.

(*d*) To determine the extent to which the Public Utility Holding Company Act has been carried out by SEC.

(*e*) To determine the extent to which the industry is meeting its public utility responsibility.

There must be immediately established at every level of private utility operation a thorough and continuing investigation of all expenditures of moneys by power monopolists for propaganda, lobbying, political activity, or corruption of public servants or institutions. Regulatory bodies, law enforcement agencies, legislatures, and the Congress itself must discharge their duty to the American people to expose, punish, and publicize unethical, immoral, or illegal practices on a vigorous and continuing basis. There must be immediate and continuous action to assure that benefits of tax concessions, accelerated amortization subsidies and similar windfalls to private companies reach consumers and that inflated valuations, watering, and inefficiency are not charged in expense.

We oppose the merger of private utility corporations in the Pacific Northwest as being contrary to the public interest and as encouraging monopoly. We oppose any amendment of the Public Utility Holding Company Act of 1935 so as to exempt from regulation such proposed supergenerating corporations as the Pacific Northwest Power Co.

We urge Congress to direct the Federal Power Commission to require accounting adjustments removing from the utility rate base all net plant investment which has been written off under accelerated amortization and liberalized depreciation. We also urge Congress to investigate SEC, FPC, and the Bureau of Internal Revenue in regard to lax accounting and tax administration involving private utilities.

We urge the improvement of corrupt practices laws so as to prohibit the use of rate-payer funds for lobbying, propaganda, political activity, and to influence elections on the part of private electric corporations.

XVIII. DAMS NEEDED FOR NATIONAL DEFENSE

We consider an adequate supply of electric power as a critical element in the national defense. The present nationwide power shortage is indication of military weakness and unpreparedness. In the recent war, the strength of our enemies and of our allies was largely in proportion to their supply of electric energy.

We note that our War Production Board translated large military orders into electric power demand and then ordered the building of defense plants in areas where electric energy either was available or could be made available. The Board regarded power supply as more important than any other production factor

except manpower. Under the War Production Board we installed the remaining Bonneville Dam generators and diverted two Shasta Dam generators to Grand Coulee. This was done for increased war production. We believe this Nation, strictly from concern for national defense, should always have a reserve of at least 15 percent above peak loads. We deplore the lack of a national military policy providing for adequate power supply.

To correct this deficiency we urge that Congress by law require the Secretary of Defense, through the National Security Resources Board and in cooperation with other agencies, to conduct continuing surveys of our energy requirements for war production and to make annual reports to the President and Congress with recommendations for meeting such electrical requirements.

XIV. POWER BUSINESS IS PUBLIC BUSINESS

The furnishing of electric energy is the second most important public utility function of government, second only to the furnishing of safe domestic water supply.

Consumer-owned power systems have had a profound effect upon this industry, acting as a bridge between the people and their power resources. These systems have served as a yardstick of performance in low rates, good service, rural electrification, responsiveness to the public will, and as advocates of sound conservation of national resources.

Consumers from all walks of life have a vast stake in an abundance of low-cost electricity.

Suggestions for the improvement of this consumer policy statement should be sent to the Northwest Public Power Association, Vancouver, Wash.

ANALYSIS OF THE COLUMBIA RIVER DEVELOPMENT CORPORATION ACT

The need for major revision of the Bonneville Act of 1937 is acute. In recent years the operative efficiency and morale have been deteriorating. A serious mistake was the transfer and centralization in 1950 of the day-to-day administrative decision-making from the region to the Department of the Interior in Washington, D.C. In respect to both income and outgo BPA is losing money because it is floundering. An early rate increase is threatened, effective December 20, 1959. This would be tragic for the region and its healthy economic growth.

The purpose of the Columbia River Development Corporation Act is to amend the Bonneville Act to provide a corporate form of administration, subject to all the provisions and safeguards of the Government Corporation Control Act and the civil service laws. Construction of dams will continue to be done by the Corps of Engineers and the Bureau of Reclamation. Congressional control and surveillance is assured by the requirement of both authorization of projects and approval of budget. This is not a CVA.

The bill changes BPA into a Federal corporation with a 5-man board of directors appointed by the President with the advice and consent of the Senate. The Board appoints and supervises the general manager. Among the provisions for grassroots voice in corporate affairs is the creation of an Advisory Council with each Pacific Northwest Senator and Representative naming a member thereon.

In addition to continuing the present functions of BPA the Corporation may itself construct thermal plants, and by use of its own revenues, appropriations, and sale of bonds to the U.S. Treasury, as and when Congress approves its budget, may advance funds to the Army and the Bureau for hydro construction.

The preference clauses and the withdrawal clause of the Bonneville Act are retained in full (secs. 4 and 5).

Section 2(g) directs the Corporation to meet the region's power needs that are not otherwise being met.

An improved cost allocation system is provided with final approval placed in the Congress (sec. 6).

The enterprise is required to operate on a self-liquidating basis.

Encouragement to industrial use of electricity is made a corporate purpose in sections 1(b), 2(b), 2(d), 2(g), 6(a), 9(a) (14), and 12(c).

The means of financing are broadened to include three methods, subject to control by Congress over both authorization of projects and approval of the

annual budget: (1) Reuse of own revenues, (b) regular appropriations to the Corps of Engineers, the Bureau of Reclamation and to the Corporation, and (c) sale to the U.S. Treasury of up to $1.1 billion in electric revenue bonds.

This draft of the bill is the result of a tremendous amount of work covering 5 years and costing many thousands of dollars not to mention donation of much valuable time by public spirited leaders and dedicated public servants. The bill has been carefully screened by Federal attorneys on technical points. Extensive public hearings have served to eliminate the points of political hazard. The bill is in the public interest.

Senator NEUBERGER. I note that your statement is extensive, as you pointed out. If you paraphrase this and emphasize what you consider the highlights, your statement will appear in the record in full. You can choose to present it as you see fit.

Mr. NORWOOD. Mr. Chairman, my general statement is in two parts. First we outline the economic problems which are coming to a head in a discussion going on in the Pacific Northwest in regard to Bonneville rates. In my statement I have outlined the various factors which have resulted in the adverse Bonneville revenue cost picture. We have proposed a course of action which makes us feel that there is no rate increase needed, but in the course of making all these studies we have come across so many different methods and arbitrary decisions in connection with the Federal power program that I think that the same general problems apply throughout the country and not just in the Pacific Northwest.

Therefore, in the second half of my statement we have discussed the general Federal power program without particular attention to the Pacific Northwest. I think for our purposes this morning, I would like to concentrate on the California intertie as probably one of the most promising immediate steps which can be taken.

I know that the Appropriations Committee of the Senate is interested in this matter because it has been suggested to them, although it is not in the President's budget that the committee consider a $100,000 appropriation to the Bonneville Power Administration and another $100,000 to the Bureau of Reclamation for the initial planning of the California intertie.

One of my exhibits is a nine-page memorandum which summarizes all the information which we have available at this time on this intertie.

Senator NEUBERGER. I want to say that this memorandum will appear in the record in full.

(The memorandum referred to follows:)

NORTHWEST PUBLIC POWER ASSOCIATION RESEARCH MEMORANDUM TO PACIFIC NORTHWEST DELEGATION IN CONGRESS ON CALIFORNIA INTERTIE

1. It is respectfully recommended that Congress appropriate $100,000 of loan funds to the Bonneville Power Administration and a like amount to the Bureau of Reclamation to plan the joint construction of one and ultimately two transmission lines of at least 345,000 volts to interconnect the Columbia River power system and the Central Valley project.

2. Our study indicates that the California intertie would have an extremely favorable benefit-to-cost ratio of about 5 to 1. It would be an excellent investment.

3. An urgent public interest reason for early construction of the intertie is to eliminate the threat of a wholesale rate increase by the Bonneville Power Administration on the next review date of December 20, 1959. BPA must make its decision in a matter of weeks. If the line had been in operation last year BPA

could have changed a $2.9 million deficit into a comfortable surplus for that year. This will be covered in more detail later in this memorandum.

4. In terms of conservation of oil, if we send 3 billion kilowatt-hours into the California market annually, there will be a saving (at 600 kilowatt-hours per barrel) of 5 million barrels of oil per year. This is fifty 100,000-barrel tankers of oil per year.

5. Two 345,000 volt lines can carry about a million kilowatts of dependable power to California as summer firm power, as oil displacement and as emergency, breakdown and backup relief power. However, this is a two-way street and a substantial benefit can accrue to the Pacific Northwest as well. Especially in a critical water year on the Columbia River the Pacific Northwest would obtain vast benefits from the intertie. The line would also be of much value for national defense.

6. The board of trustees of the Northwest Public Power Association on November 14, 1958, adopted a resolution favoring the California intertie. Similar supporting resolutions have been adopted by the Oregon PUD Association Southwest Washington PUD Association, Eastern Washington PUD Association, Washington Public Utility Districts Association, Oregon Rural Electric Cooperative Association, Idaho REA Association, Washington REA Association, and Region Nine of the National Rural Electric Cooperative Association. We are not aware of any present opposition to a California intertie, assuming reasonable safeguards.

7. Historically the California intertie has been frequently urged. The ultimate construction of the intertie was envisioned as early as November 1935 in the report of the Pacific Northwest Regional Planning Commission as published in 1936 by the National Resources Committee. This is the report which in part resulted in enactment of the Bonneville Project Act of 1937. The intertie is shown on the map following page 40 of the report.

8. Most recently the intertie has been most strongly recommended by Consulting Engineer Sol E. Schultz of H. Zinder & Associates in a report of December 19, 1958, to the Public Utility Commissioner of Oregon, which report is entitled, "Pacific Northwest Transmission Development as Related to the State of Oregon". Excerpts from this report are submitted later in this memorandum.

9. On December 20, 1950, the Defense Power Administration issued a finding that the California Interconnection was in the interest of national defense. The Secretary of the Interior, Oscar Chapman, thereupon approved on January 16, 1951, a basis of agreement between the Bonneville Power Administration and the Bureau of Reclamation for operating the facility.

10. The Federal Power Commission prepared two extensive reports favoring the interconnection. The first document dated February 1950 is entitled, "Study of an Interconnection between the Electric Systems in the Pacific Northwest and California". The more complete document of March 1953 is entitled, "Report of Feasibility of California-Oregon 230KV Interconnection," comprising some 150 pages. These reports are now considered obsolete and also they understate the case.

11. The U.S.S.R. has recently constructed the equivalent of the California intertie, a double circuit 400,000-volt line, which is later to be operated at 500,000 volts, from the Kuibyshev Dam on the Volga River 600 miles to Moscow. By comparison, the distance from the Dalles Dam to San Francisco is 530 miles. Kuibyshev at 2,300,000 kilowatts capacity is presently the largest power dam in the world.

12. The long-range market for Pacific Northwest dump power in California is assured. For example, the California water plan not only will need the remaining hydroelectric power potential of California for water pumping purposes but will in addition require some 6 million kilowatts of new steam capacity also for pumping. Since Pacific Northwest power is surplus chiefly during the California summer pumping season, the market is assured. In turn California will be in a strong position to assure the Pacific Northwest of surplus winter steam capacity to help carry the Northwest during a critical water year winter.

13. Several California interties are under discussion. It will be helpful to divide the discussion into two parts, short run and long run. The short-run plan is being pursued by BPA as follows: BPA is negotiating with California-Oregon Power Co. and Pacific Gas & Electric Co. for a contract which would provide sufficient incentive to those companies to invest about $5 million to build 20 miles of 230,000-volt line from Klamath Falls to the California boundary, then 70 miles 230,000-volt line to P. G. & E.'s Pit River plant No. 3 plus switching stations and series capacitors. This arrangement would be limited to a

capability of about 200,000 kilowatts. The line could be built in 1 year. While the terms of the proposed agreement have not been finalized, we would generally favor a deal which assumes a price of BPA power at the California boundary of about 2.5 mills for energy actually sold. This short-run approach should enable the private utilities to amortize their line in a very few years and also enable BPA to enjoy some revenues earlier. However, it would be a monopoly line. It should have been constructed long ago as a Federal line to insure full protection of the public interest.

14. For the long run we propose a single and ultimately a double circuit heavy capacity line at initial voltage of 345,000 volts and spacing for ultimate 460,000 volts extending about 530 miles from The Dalles and John Day Dams southward via Lakeview, Alturas, and Sacramento to San Francisco. The carrying capacity would be at least a million kilowatts. It is this larger "common-carrier" line for which we now urge Congress to release planning funds.

15. The high capacity California intertie will benefit everyone. It is to be a public common-carrier facility available first for exchange of power between the Columbia River power system (BPA) and the Central Valley project (comprising the Bureau of Reclamation's Shasta, Keswick, Folsom, and Trinity Dams).

16. The Federal Government itself would be a major purchaser of BPA power in the San Francisco Bay area for Mare Island Navy Yard, the prisons, the huge Tracy pumping plant, and many other large loads. BPA power might cut the summer peaks at some of these loads to achieve dramatic savings for the U.S. Treasury. Secondly, the Bureau of Reclamation's power-marketing status would be immeasurably improved. Even the present pro-private-utility Comptroller General of the United States has criticized the Bureau of Reclamation for failing to make adequate charges to Pacific Gas & Electric Co. for the dependable capacity value of Shasta Dam and Keswick Dam powerplants. The intertie would obviously help the Bureau of Reclamation.

17. As a common-carrier line, the California intertie should be available for a reasonable fee to non-Federal agencies, public or private, for wheeling purposes for the exchange or sale of power. These benefits can assist these utilities to achieve economies and hold down rate increases and also can increase their firm powerload carrying capabilities, thereby reducing their costs for reserve generating capacity.

18. The Northwest Public Power Association opposes any monopolization in connection with the proposed California intertie. It should be a common-carrier facility operated on a free-market principle. Therefore the larger line must be publicly owned and publicly controlled. Furthermore the terminal facilities and arrangements must be such as to permit access by all utilities.

19. A broad market is available for the California intertie at both ends. For instance, the large Sacramento municipal utility district serves about 450,000 people with electricity purchased at about 4 mills from Shasta Dam. While the Bureau of Reclamation contract assures Sacramento municipal utility district up to 290,000 kilowatts up to 1994, the price of 4 mills is reviewable in 1964. In 1955 the Sacramento municipal utility district signed up with P.G. & E. for an additional 300,000 kilowatts until 1971. In 1957 the Sacramento municipal utility district paid $4,600,000 for power. The Sacramento municipal utility district is also investing $85 million to develop 200,000 kilowatts on the American River with 900 million kilowatt-hours energy capability. This energy will come mostly in winter and can be nicely combined with Columbia River summer power. Thus Sacramento is a potential market. However, it merely illustrates the similar cases of public-utility district and municipal markets of northern California.

20. The Pacific Gas & Electric Co. in both the short run and long run is the largest potential market for intertie power. In 1945 hydro provided 85 percent of P.G. & E.'s energy. Hydro capacity was 2.2 times the steam capacity. In 1952 steam caught up with hydro and by 1961 will be 50 percent greater than the hydro capacity. The 1961 demand will be 5½ million kilowatts and the energy need 30 billion kilowatt-hours, divided 13 billion kilowatt-hours hydro and 17 billion kilowatt-hours steam. At 7 percent rate of growth P.G. & E.'s 1970 need will be 10 million kilowatt capacity and 55 billion kilowatt-hours of energy, increasing by 1975 to 14 million kilowatts capacity and 77 billion kilowatt-hours of energy, of which steam must furnish at least 50 billion kilowatt-hours, which means over 80 million barrels of oil per year. Even if half the oil equivalent should come from natural gas, P.G. & E. will need over a 100,000-barrel tanker of oil per day in 1975. Obviously the P.G. & E. system can absorb all surplus dump power available at any future time in the Pacific Northwest. This is just as oil displacement.

21. As previously mentioned, an early future market will be the California $13 billion water plan to transfer 21 million acre-feet of water each year from northern to southern California. Assuming the harnessing of 7 million kilowatts of hydro potential (which P.G. & E. also counted for itself in par. 20), the California water plan will require 6 million kilowatts of steam capacity in summer for pumping water. Here is another vast market for Columbia River summer power.

22. At an ultimate cost of $40 to $50 million the California intertie would cost less than a new steamplant of half the capacity. But whereas a new steamplant could serve only one area or the other, the intertie would serve both areas, have double the capacity and have no fuel cost. Even more critical would be the value of the line to prevent the brownouts and power shortages such as those of California in 1948 and in the Pacific Northwest in 1948 and 1952. Even the apparently mutual shortage of 1948 could have been handled and solved by the California intertie.

23. The California intertie is one of the largest and most important business decisions facing Congress in regard to the Bonneville Power Administration. The 20-year growth of the BPA surplus hit $104.7 million as of June 30, 1957, then slipped for the first time in BPA history. As of June 30, 1958, it was $101.7 million and may slip further to an estimated $94.8 million by June 30, 1959, and $89.7 million by June 30, 1960; however, the recent upswing in business should improve this picture.

24. This surplus is the cumulative profit above all costs required under the FPC uniform system of accounts. As of June 30, 1957, for example, BPA had accumulated $529 million in gross revenues from which it paid $141 million for O. & M., $122 million for depreciation (mostly debt repayment to the U.S. Treasury), $162 million for interest for a total of $425 million of total costs leaving $104,711,339 surplus net revenues.

25. The business decision to be made is whether to absorb the present annual deficits by letting them reduce the cumulative surplus net revenues from previous years. We think the answer is, "Yes, if the California intertie is promptly started." Without the California intertie BPA is in for rough sledding and may require a rate increase in 1964.

26. We are aware of other business decisions which can improve the management of BPA and we propose that these be placed in effect. Chiefly Congress, by enactment of the Columbia River Development Corporation bill, can take care of the remaining areas. One of these is to set aside, with respect to power from future generators, the anti-industry clauses of the 20-year private utility contracts of August 1953 as entered into by Secretary Douglas McKay.

27. Regardless of explanations, BPA in the year ending June 30, 1958, had to waste over 15 percent of its power because of the lack of a "farm-to-market road" to get the power to a ready market. It could have generated and sold an additional 5,800 million kilowatt-hours over and above the 32 billion kilowatt-hours which it did sell. Through the intertie BPA would have been able to sell much of this surplus and would have changed a $2.9 million deficit into a comfortable surplus. Other advantages to BPA would be the changing of its definition of firm power so it could upgrade its power under critical water conditions by including imports from California. Thereby BPA would have more firm power to sell and would be in a healthier market position. The intertie would largely eliminate the fears of a minimum water year in both the Pacific Northwest and California.

28. The most recent report favoring the intertie by Consulting Engineer Sol E. Schultz, former BPA Chief Engineer, states in the covering letter of December 19, 1958:

"One matter * * * we believe deserves particular attention, relates to the possibilities of a major interconnection with the power systems in California. We are convinced that a comprehensive survey would show substantial and lasting benefits from such facilities to Oregon, the Northwest, and California."

Chapter V, pages 29–39, is devoted to the problem of surplus hydro and the possibilty of marketing in California. Mr. Schultz finds (p. 32) that the Pacific Northwest will have an average surplus of energy of at least 3 billion kilowatt-hours (per year) over the next 10 or 15 years.

We think it will be at least that much.

We conclude this research memorandum by quoting in full the concluding portion of the report by Mr. Schultz, pages 36–39:

INTERREGIONAL TRANSMISSION OF POWER

"For many years the Utah Power & Light Co. has pooled its power supply with that of the Idaho Power Co. and the Montana Power Co. Surplus hydroelectric energy from Idaho and Montana has thus been used to reduce fuel consumption in Utah while energy from Utah's steam plants has been available to supplement hydroelectric production in Idaho and Montana when stream flows were low. Since 1955, when a high capacity interconnection between the Idaho Power Co. and the Bonneville Power Administration was made at La Grande, Oreg., a similar interchange has been possible between Idaho-Utah and the west group of the Northwest Power Pool. (Earlier interchange limited by capacity of lower voltage transmission lines.) In the 12 months ending June 30, 1958, BPA sold over 128 million kilowatt-hours of nonfirm power to the Idaho Power Co. over the La Grande Interconnection.

"It appears appropriate to suggest that active consideration now be given to the possibilities of the sale of such surplus energy to the power-supply systems in the State of California. This may raise anew certain problems relating to power interties between the Northwest and California, which seem to fall outside the fields of engineering or economics.

"The matter of a 'California Tie' (as it was called) was studied by the Bonneville Power Administration and the Bureau of Reclamation in the early 1950's. Later the Federal Power Commission (with the participation of all of the agencies and utility companies concerned), made a study which culminated in the report by the Commission issued in March 1953. This report confirmed findings of the two Department of the Interior agencies that the tie showed important engineering and economic benefits, but no action was taken.

"The FPC report was premised on the assumption that interconnecting facilities between California and the Northwest would be in service by the fall of 1954. Viewed in retrospect, there can be little question that these facilities would have shown much greater benefits than those indicated in the FPC report.

"Had the interconnecting facilities comprising two 230-kilovolt circuits been placed in operation by the fall of 1954 as supposed in the FPC and the BPA studies, the sale of dump energy to California would have completely amortized by now the investment of about $16 million in such facilities. (Assuming a price of 2.5 mills per kilowatt-hour times the amount of energy available from the Federal system as shown by table 7 but limited to the capacity of the two 230-kilovolt circuits.) Moreover, the revenues henceforth over the next 10 years would probably be sufficient to wipe out the fiscal deficits forecast by the Bonneville Power Administration and referred to above. In the FPC report it was assumed that this exportable energy was valued at 3 mills per kilowatt-hour, based on oil for steam-electric generation at 01.88 per barrel. Today the price of oil in California is betwen $2.50 and $3 per barrel.

"Revenues from the sale of dump energy represent only one of a number of highly important benefits to be realized from power interties with California. Among the most noteworthy are the following:

"1. The interconnection would promote the conservation of natural resources. The annual utilization of as much as 3 billion kilowatt-hours of otherwise wasted hydroelectric energy each year would result in an annual saving of 5 million barrels of oil.

"2. It would increase the dependable power supply capacity in both California and the Northwest because of the diversity of loads and resources between the areas. It is believed this factor alone would justify a major investment in tie-line facilities.

"3. It would provide reserves against power emergencies in either of the areas. One only has to recall the incident of March 14, 1952, at Grand Coulee Dam when the entire plant was threatened with a protracted shutdown to appreciate how important the tie lines might be in similar circumstances.

"4. It would have real value to meet the exigencies of national defense.

"All available reports on California-Northwest interconnections are at least 5 years old and require major revision to bring them up to date.

"Because of their limited scope, none of the existing studies were truly comprehensive in evaluating all of the benefits that might accrue to such facilities. It is timely now to suggest that steps be taken to conduct a definitive survey that will achieve this purpose."

Respectfully submitted.

GUS NORWOOD, *Executive Secretary.*

Senator NEUBERGER. I want to say to you that I regard this intertie as extremely important to the development not only of the Pacific Northwest, but of northern California. I think it should have been constructed long ago. I believe it was presented by some misleading propaganda and hysteria that took place, largely over the claim that water itself was going to be diverted from the Pacific Northwest to California where they have had a shortage of water for domestic supply and irrigation for many years. I would like to ask you several questions.

This merely contemplates the exchange of power over transmission lines, is that not correct?

Mr. NORWOOD. That is correct, sir. The Bonneville Power Administration last year dumped about 15 percent of its power over the spillways. At the same time the companies in northern California burned over 5 million barrels of oil that could have been displaced as fuel displacement by the dump power which we had available.

Senator NEUBERGER. There would be no diverting of water itself by flumes, canals, or conduits, or any other means, from the Columbia River system into California as part of this intertie program, is that right?

Mr. NORWOOD. Not at all, sir. If anything, we might possibly be able to help both regions conserve their water because of a better shifting of power back and forth so that water may not unnecessarily have to be released for generating purposes.

Senator NEUBERGER. Is it not correct, also, that the intertie, as you proposed it, does not involve any aggravation, if you want to call it that, of the controversy between public power and private power? In other words, if the dump power which the Bonneville Administration had to allow to go to waste under existing circumstances were sent to California, it would be available in the same degree for either private purchasers or public purchasers as existing power is available in the Central Valley system, is that not correct?

Mr. NORWOOD. Yes. It goes further yet. The California intertie would serve as a common carrier transmission line, the use of which would be available to everyone. It would not be just the Federal Government that would transmit power over the line. Other public bodies and private agencies at both ends would find a certain amount of use for the intertie in order to sell whatever surplus power they might have available.

Senator NEUBERGER. How long would the intertie line be on the whole? It originated at the Dalles Dam on the Columbia River, is that correct?

Mr. NORWOOD. Yes, the Dalles would probably be operated by having several generators isolated and put on this intertie and would in effect be used at higher voltage to push power into California during our flood season which is during May, June, and July, particularly.

The intertie could be as long as 530 miles if it went all the way to San Francisco. A little bit less if it went to Sacramento. This may seem like a startlingly long distance. Let me point out that the Russians are operating a 600-mile, 400,000-volt transmission line from the Kubichev Dam on the Volga River to put power into Moscow that is not dump power, but the firm power requirements of the city. They are actually depending for their basic electric power supply in Moscow on a transmission line that is 600 miles long.

Senator NEUBERGER. Is that line efficient to your knowledge, without a lot of slippage and waste?

Mr. NORWOOD. Yes. That 400,000 volts would be operating with less loss than any transmission line we have in this country, because as you increase the voltage your losses are decreased.

Senator NEUBERGER. Have we energized any lines at that voltage?

Mr. NORWOOD. We have about four lines operating in the Pacific Northwest now at 345,000 volts. A double circuit line of 345,000 volts will carry a billion kilowatts. So we are really getting into a bulk power transmission technology.

Senator NEUBERGER. So you are convinced, then, that the intertie from The Dalles Dam even to the big load centers around San Francisco is technically feasible?

Mr. NORWOOD. Yes, sir. In addition it is highly economic. We have one preliminary study made by H. Zinder & Associates, which indicates a benefit-cost ratio of about 5 to 1.

Senator NEUBERGER. I have just had called to my attention by Mr. Stong that there is a letter to the chairman of the Interior Committee from Senator Engle, the junior Senator from California, requesting the committee to hold hearings on the California-Pacific Northwest intertie. I will have Senator Engle's letter made a part of the record at this point, because I think it is pertinent to the discussion which you and I have been having.

(The letter referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
February 12, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR SENATOR: Newspaper stories reveal that the Bonneville Power Administration has begun discussions with the Pacific Gas & Electric Co. to consider the possibility of building transmission lines to connect the Pacific Northwest grid with California. I know that your committee is vitally interested in this matter, and I am writing to suggest that you inquire into the nature of the negotiations between Bonneville and the P.G. & E.

So far as I am aware, no California public agencies have participated in the meetings. It is my concern that the exclusive discussions between Bonneville and the P.G. & E. may lead into another potential "partnership deal" such as the P.G. & E. and the Department of the Interior tried and failed to get through the last Congress with respect to the Trinity power development. On the basis of information so far available, it is my belief that it would be in order for you to request that no contract be entered into regarding the proposed Bonneville-California intertie until there has been ample public discussion before your committee

As you probably know, a federally constructed intertie consisting of two 230-kilovolt lines between Bonneville and the Central Valley project of the Bureau of Reclamation was seriously considered some years ago. Engineering reports at that time indicated such an interconnection to be highly feasible. Other studies were made by the Federal Power Commission and the California Public Utilities Commission. The situation has not changed basically over these years except that greater volumes of surplus energy now exist in the Northwest which might be transmitted to California.

A transmission intertie between the Northwest and California has great potential for both areas, and for both public and private agencies. Because of the defense implications of such an intertie, its vital relationship to the maintenance of current low power rates in the Northwest, and its importance to the California water program, I regard the problem as one of national concern.

It is especially important that any interconnection be of adequate capacity to do the full job for all parties. My information is, however, that the Administra-

tion has under consideration a relatively small capacity line which, in the judgment of many competent professional experts, would not do the job that is required.

The Pacific Northwest-California power intertie becomes more important every month. Billions of kilowatt-hours of valuable electric energy are being wasted at Columbia River powerplants. Ridiculous as it may seem, the Bonneville Power Administration at the same time is going deeper in debt, or falling further behind on repayment. To raise Bonneville rates is not the answer. It will drive more Northwest industries into Canada. As I have indicated, previous reports showed the transmission intertie to be one of the most feasible projects the Government could build. I advocated it vigorously in 1950 and 1951, but the present Administration succeeded in selling part of the necessary existing lines and the project was defeated.

I am sure you will agree also that the Bonneville-California intertie should be constructed so that public agencies retain their preference in the purchase of power under existing Federal law. The Department of the Interior should not be permitted to circumvent that expressed will of the Congress.

After the facts have become public before your committee, we should get together to see what legislation is necessary to make the best use of the Federal power resources on the Pacific coast. We should not permit a Federal agency to go broke while precious electric energy is going to waste that can be sold and profitably utilized.

I hope you will give immediate consideration to this subject and take what you consider to be appropriate action.

Sincerely yours,

CLAIR ENGLE, *U.S. Senator.*

Senator NEUBERGER. I also would like to say that I reinforce and support Senator Engle's request that the Interior Committee do hold hearings on the California-Bonneville intertie because I believe it would be of benefit to the Pacific Northwest, where I come from, and to California, where Senator Engle comes from. I think it is significant that there is now support for hearings on the intertie not only from the Pacific Northwest, where you and I come from, and where some influential segments of the press have been supporting it, but now from the State of California through Senator Engle. It is my hope that Senator Murray will consent to hold hearings on this very important issue, and I have no doubt that he will accede to that request as is his characteristic.

Mr. Lineweaver, of the committee staff, suggests that you tell us, if you know, of any discussions that have taken place between the Bonneville Power Administration and the Pacific Gas & Electric Utility Co. in California with respect to an intertie, or of the California-Oregon Power Co., which operates in northern California and southeastern and southwestern Oregon.

Mr. NORWOOD. Yes, sir. Mr. Chairman, the Bonneville Power Administration has had this general subject in hand for about 8 or 9 years. About a month ago, two of the top staff personnel of the Bonneville Power Administration discussed the intertie with company officials, including Pacific Gas & Electric Co. officials, at San Francisco. I have no further report on the meeting, except that it was a friendly meeting, and the discussions have been started.

Senator NEUBERGER. The intertie which we have been discussing would implement these discussions if it is undertaken, is that correct?

Mr. NORWOOD. Excuse me. I should have made a distinction here as I do in my written statement. There is a small intertie under discussion which would involve the construction of about 70 miles of private utility line from Klamath Falls to Pitt River plant No. 3, and this intertie would carry about 200,000 kilowatts. It would

be a line of 230,000 volts, and can be constructed in about 1 year at a cost of about $5 million. This would be a private utility line if Bonneville and the company can get together on terms. Such a line would probably be amortized from the benefits in a 5-to-10-year period. It would be very attractive economically.

The line which we are talking about is a much heavier line, a double circuit line of 345,000 volts, to carry in addition to this small line about a million kilowatts. It is this longer line that we are asking the Congress to consider because of its very high benefit-cost ratio and because of the national interest in conservation of oil. For example, as Mr. Schultz of H. Zinder & Co. points out in his report, if we can displace 3 billion kilowatts in the California market, that is the equivalent of about 5 million barrels of oil, which is the equivalent of about 50 tankers of 100,000-barrel capacity each. It is just a tremendous amount of oil. So there is a conservation aspect to this in addition to the attractive economies both to the Pacific Northwest and to California.

Let me mention, while I have my notes on this, that we have been very careful to discuss this intertie with a great many people, and I refer in my testimony to some nine resolutions which have been passed by all of our various utility groups in support of the tie.

Senator NEUBERGER. Mr. Lineweaver mentions the preference customers in the Sacramento area, and the public utility district there. Are they interested in the intertie?

Mr. NORWOOD. Very much so. I understand that at one of the meetings which I did not attend there was a representative for 11 of the municipals in northern California, as well as the large Sacramento Utility District, and we are interested in a broad market being available in California so that no one group or no one company can be in what might be a monopolistic bargaining position. We know that over and above all the existing markets in California, for example, there will ultimately be the tremendous market provided by the California water plan, a $13 billion program, which will some day require an additional 6 billion kilowatts of steamplants just for pumping capacity that is not otherwise served by a large amount of hydro which they expect to bring in. So the market for power in California is virtually unlimited for this line.

Senator NEUBERGER. Let me ask you this while we are on the subject of the intertie: Do you know any important segment of public opinion in the Pacific Northwest or California which is opposed to construction of the intertie?

Mr. NORWOOD. I know of no opposition whatsoever. I would say, however, that there has been relatively little publicity on it. No engineering drawings have yet been made. It has not been adequately discussed. It is a fresh subject.

Senator NEUBERGER. You do support, I trust, the request of Senator Engle and myself that the Interior Committee hold full hearings on the proposed intertie?

Mr. NORWOOD. This is one of the main points in our testimony. We strongly urge that the Senate Interior and Insular Affairs Committee conduct a hearing on this as a guide to the Senate Appropriations Committee to make planning funds available. No new legislation should be needed because Bonneville and the Bureau have sufficient

legislative authority to construct such lines. The only thing that is needed is the initiation of appropriations for planning.

Senator NEUBERGER. Before I have to leave in a few minutes, I want to thank you particularly for raising the issue of the intertie, for bringing us this very useful documentation which your organization has already made on it, and to assure you that every effort will be made by Senator Engle and me, and no doubt by other members of the committee, to have hearings held on the question of the intertie. If my estimate of Senator Murray's interest is correct, I think I can safely predict that such hearings will be held.

Mr. NORWOOD. Mr. Chairman, summarizing some additional points on the intertie, the Federal Power Commission has two extensive reports on this, each about 1 inch thick. When the Defense Electric Power Administration looked at this intertie in 1950–52, it particularly emphasized the national defense aspects and the fact that you can more fully utilize the electric systems of the entire Pacific coast for defense purposes better than they are now being used. I might mention that historically the California intertie was recommended as early as 1935 by the Pacific Northwest Regional Planning Committee.

I might say that to us in the Pacific Northwest the California intertie would have an immediate impact in approving the market for Bonneville Power Administration power because of the fact that the last 2 years of depression have forced Bonneville to the point where its revenues have been just slightly underneath its costs. Yet we can see in this California intertie a net income possibility of at least $8 million, which would avoid any Bonneville rate increase for at least 10 years, we think. So the California intertie has a direct impact on all of our systems and on electric rates throughout the Pacific Northwest by holding off a Bonneville rate increase.

Senator NEUBERGER. If funds were provided this year for the study that you have suggested, how long do you think it would take to construct an intertie of the proportions you are recommending?

Mr. NORWOOD. Utilizing Bonneville experience, I would say it would probably take 3 years from the time that first planning funds were made available.

Senator NEUBERGER. So, in other words, haste is of the essence.

Mr. NORWOOD. Haste is of the essence, because I am assuming that for such a heavy line Bonneville would use steel tower construction which takes longer than wood pole construction.

Now, Mr. Chairman, in order to present the picture clearly, I would like to read my prepared statement, and then the memorandum on the Pacific Northwest on the California intertie.

Senator NEUBERGER. Very well; you may proceed.

Mr. NORWOOD. Our systems serve about 1,750,000 people with electric power. Most of this power is purchased from the Federal power projects. Our systems pay into the United States Treasury about $30 million per year for this power. These projects include the Eklutna project in Alaska as well as the various dams of the Columbia and Missouri Basins. Through our power bills we repay the power portion of these Federal investments together with interest and all costs of administration, operation, and maintenance.

Thank you very much for holding these hearings. They are very much needed.

My testimony is in two parts. First I wish to present as a case study the chief factors which are involved in what we consider an entirely unwarranted suggestion that the Bonneville Power Administration should increase its rates. We will propose a course of action to solve the BPA rate problem.

Secondly, we wish to catalog or list generally some complaints and problems in connection with the Federal power program and at the same time we will list our constructive suggestions for both legislative and administrative action for improvement of the Federal power program in the national interest.

We understand the present hearing is exploratory to identify the chief problems and possible solutions relating to the Federal power program. Our testimony is in keeping with this view.

In order that a more detailed record can be developed, and contingent upon such further action as may be taken by the Department of the Interior, we respectfully request that the Committee on Interior and Insular Affairs conduct a more detailed inquiry and further public hearings on the matter of wholesale rates of the Bonneville Power Administration as a special case study in Federal power administration. Further to this end we would like to suggest that the committee utilize much the same procedure as that of last year in connection with the hearings on Columbia Basin problems.

In preparation for the Columbia Basin problems hearings last year the committee requested considerable information from the Bonneville Power Administration, which was not otherwise available to the public, and this data was issued as a valuable committee print. This procedure greatly facilitated the subsequent hearings. May we express at this time our appreciation for those hearings and point out that they have served a useful purpose in focusing attention on the southern Idaho power supply situation and on the Harney Electric Cooperative situation, on both of which constructive steps are now being taken.

In its 20 years of active power marketing the Bonneville Power Administration has accumulated as of June 30, 1957, a surplus net revenue of $104,771,339. Even after repaying dams on an amortization basis of 50 years repayment period and 32 years for Grand Coulee, the surplus above scheduled repayment is $78,806,820.

The size of this surplus is the more startling when it is considered that the total accumulated gross revenue of the Administration for the 20-year period has been only $529,205,859. From this sum has been subtracted interest of $161,718,043, depreciation of $121,602,831, and operating costs of $141,173,646, to achieve the $104,711,339 surplus net revenues.

The Bonneville Act, of course, does not require such surplus or profit. It merely calls for repayment of all Federal power costs over a reasonable period of years. In actual practice BPA has been paying interest as well as amortization.

Furthermore, BPA has been repaying the dams in a much shorter period than would be justified on the basis of probable economic service life. It is considered that a reasonable economic service life for Pacific Northwest dams is at least 150 years. However, even for depreciation purposes BPA uses 100 years at all projects except for 150 years at Hungry Horse Dam. This very conservative policy of

repaying dams way ahead of the depreciation schedule accounts for the difference between the $104 million of surplus net revenues on an FPC depreciation cost accounting basis on the one hand, and on the other hand the $78 million surplus on an amortization or payout schedule basis.

It is our view that the $104 million surplus net revenue is a valid and true surplus. The decision to use 50 years for repayment purposes was not made by the Congress but was made by the Federal Power Commission in the Bonneville cost allocation report. We disagree with the Federal Power Commission. This difference of $26 million of extra surplus is merely an indication of the extremely conservative policies which have been used by BPA.

It will be recalled that the Bureau of Reclamation has increasingly made use of repayment periods longer than 50 years. TVA has long used 100 years for depreciation purposes. Last year the U.S. Senate adopted Senate Resolution 148 which stipulated that any agency hereafter submitting project reports would do so by showing the benefit-to-cost ratio on both a 50-year and 100-year repayment basis.

However, even on the basis of the smaller surplus figure of $78 million we can see that it amounts to over 14 percent of all revenues during the past 20 years. With this very conservative figure as a starting point, I would now like to indicate to the committee that BPA is paying certain other costs which are unfairly imposed. Also I would like to indicate to the committee that with improved management and with the development of new power markets, BPA should easily be able to convert its present small current deficit into a healthy current surplus.

Starting with an accumulated surplus of $78 million as of June 30, 1957, BPA in the last fiscal year has had a deficit of about $2.9 million and appears to be operating at a further $3 million deficit currently. Thus it would appear that as of June 30, 1959, the BPA surplus will decline from $78 to about $72 million.

The Pacific Northwest economy has been undergoing a serious depression in recent years. Northwest States have had very severe unemployment. The aluminum industry generally has shut down its potlines which had utilized interruptible power in addition to also cutting down on the use of firm power. It is of interest to note that the $78 million BPA surplus approximates the revenues which BPA has received during the past 20 years from the sale of interruptible power. Thus when BPA loses its interruptible market, the whole revenue picture is damaged.

BPA has a vast amount of interruptible power for sale. It has never had an adequate market for its interruptible power. During the year ending June 30, 1958, for example, BPA sent 15 percent of its power over the spillways, wasted. It could have sold about 5.8 billion kilowatt-hours of interruptible power if a market had been available. This means the water was there, the generators were there, but there was no market. Even at 2 mills per kilowatt-hour this power would have been worth $11.6 million if it could have been sold. This would not only have eliminated the $2.9 million deficit but created a surplus of $18.7 million for that year.

Another reason for the deficit was an increase in BPA obligations on account of new dams and generators coming on the line ready to

serve new loads which did not materialize because of the depression and because of the policy of the Secretary of the Interior not to enter into new industrial sales contracts. One obvious remedy is for the Secretary of the Interior to reverse this utterly inexcusable anti-industry policy.

BPA should be allowed to seek industrial loads in the same manner that it did prior to the signing of the 20-year private utility contracts of August 1953. We have covered these contracts in our testimony of May 21, 1958, on S. 3114, "Bonneville Project Act Amendments of 1958," at pages 123 to 127. This is remedy No. 1.

A second contributing factor to the heavy financial burden which has put BPA in the red the past year has been the accumulative effect of the unfair cost allocations whereby, for example, 97 percent of the joint costs of McNary Dam were charged to power. Of McNary's $304 million cost, only $25.8 million was charged to navigation and the remaining $278.2 million was charged to power. This was in large part due to the use by FPC of the Army's 1948 estimates of navigation value. However, a larger allocation is justified because these navigation estimates are currently being exceeded, even in a period of depression, by some 100 percent.

The Federal agencies concerned now are discussing a revision of the McNary cost allocation so that the $147.4 million of joint facilities instead of being charged 97½ percent to power would be 81 percent to power. The difference of 16½ percent would amount to $24.3 million being shifted from power to navigation, so the power portion for the McNary project as a whole would be $253.9 million or 83.5 percent. In terms of annual costs such a modification in the McNary cost allocation would result in an annual reduction of the burden to power of almost a million dollars. Our association has extensive files on cost allocations and is prepared to testify at length thereon. Four years ago we filed a brief objecting to the McNary cost allocations.

The importance of this lies in the precedence for The Dalles, John Day, Ice Harbor, and other dams. Over half of the BPA deficit would immediately be eliminated and in future years the annual savings would be on the order of $8 million. The prompt making of these revised cost allocations is remedy No. 2.

A third problem area is Grand Coulee Dam. No portion of the cost of Grand Coulee Dam has been allocated to flood control. Yet the huge reservoir has several times been very useful in saving millions of dollars in flood losses, especially in the 1956 flood. It would appear reasonable to allocate on the order of $40 to $50 million of Grand Coulee Dam costs to flood control on the basis of actual benefits received. This flood control use has been possible even without modification of the valves for more complete flood control evacuation of the reservoir. Such a major reallocation of the Grand Coulee Dam costs would reduce the charge upon power by at least $2 million annually.

Two other aspects of the bookkeeping at Grand Coulee Dam are disturbing. BPA now pays $12.8 million per year for Grand Coulee Dam power although on a strictly cost-accounting basis with 100-year depreciation the charge would be only $8.1 million. If the use of a 50-year amortization period is conceded, then the $8.1 figure would be increased to about $10 million which we would consider fair. How-

ever, this would then be cut by the $2 million or so a year on account of flood control and thus be back to about $8 million total per year.

One reason for the discrepancy is that the Bureau of Reclamation is not using a 50-year repayment period, but instead has artificially established a 32-year repayment period—at an additional burden upon power of about $1.9 million per year. A further million dollars in charges falls upon power because the Bureau charges concurrent repayment of the irrigation subsidy as an override charge on top of power rates. This can be alleviated by spreading the irrigation subsidy so it falls upon power rates starting in the 51st year, after the power investment is repaid.

All of these possible adjustments at Grand Coulee Dam can change the burden on power from about $12.8 million per year to about $8 or $9 million, a change which would be completely honest, realistic, and desirable in the name of simple fairness. This is a saving or postponement or shifting, as the case may be, of over $4 million per year. This subject warrants careful review both by the Secretary of the Interior and by the Congress. These adjustments would constitute remedy No. 3.

The fourth and perhaps most promising business decision which Congress could make for the improvement of the power picture in the Pacific Northwest is to act favorably on appropriations for the planning of the California intertie.

The attached memorandum summarizes the currently available information on this proposed high voltage transmission line which could so well be used as a two-way street to send power southward in summer and northward in winter to the mutual advantage of both areas. This would also conserve millions of barrels of oil.

As previously stated the Bonneville Power Administration last year wasted 5.8 billion kilowatt-hours of dump power for lack of a market. Yet California power is being generated under conditions where the oil cost alone is about 5 mills per kilowatt-hour. Even if BPA could receive only 2 mills for its power, the additional revenue above all costs involved would have been at least $8 million.

The line would be built from The Dalles Dam southward through Alturas and Sacramento. Initially the voltage might be 345,000 and ultimately about 500,000. The Russians already have a longer bulk powerline in operation between the Volga River dams and Moscow, a distance of 600 miles.

The earliest possible initiation of planning of the California intertie is recommended. Probably an initial $100,000 of planning funds each to the Bonneville Power Administration and to the Bureau of Reclamation should suffice to get the basic data before the Congress.

May we point out that the staff of the Bonneville Power Administration having to do with planning is now lightly loaded. In my opinion the real incremental cost of planning the California intertie would be somewhat less than our $200,000 estimate.

We respectfully urge that the Committee on Interior and Insular Affairs schedule an early hearing on the California intertie so that a legislative record can be established as an encouragement to the Committee on Appropriations to approve the needed planning funds. This is remedy No. 4.

Without detailing all the reasons therefore, we respectfully submit as a catchall improvement in BPA and financing the proposals em-

bodied in the latest draft of the Columbia River Development Corp. bill. Our extensive testimony on this appears in the May 1959 hearings on S. 3114, totaling some 150 pages. This is remedy No. 5.

These five remedies should in the aggregate reduce or spread the annual burden on power users approximately as follows: California intertie about $8 million net, Grand Coulee adjustments about $4 million, cost allocations about $2 million now and increasing to about $8 million by 1975, and miscellaneous cost savings and new revenues perhaps $2 million now and ultimately perhaps $10 million a year.

These figures should be viewed as being merely to indicate the order of magnitude. The short run total savings of about $16 million should be related to the time in 1961 or 1962 when BPA annual revenues will pass the $100 million mark. This is a 16-percent saving in the rate level. The longer-range figures of possibly $30 million should be related to the time when BPA annual revenues reach the $200 million mark, and this is again about 15 percent of the rate.

Every new dam is coming in at a higher cost. It will be difficult to hold back the BPA rate increases of the future as more marginal dams come into the picture. Therefore it is desirable that every effort be made now to utilize reasonable and fiscally sound methods in the administration of the BPA power marketing program.

The problems cited above have been with us a good many years. They were not acute until they threatened to increase BPA rates. It is therefore urged that the committee utilize the present occasion to review the ground rules which are arbitrarily being applied in determining the costs of these operations for ratemaking purposes.

In order specifically that a suitable record can be established as the basis upon which subsequent hearings may be held, we respectfully urge that BPA be requested to submit to the committee all relevant documents on the rate question and in such a manner as to clarify and focus attention on the basic policy decisions that must be made if rates are to be established in the best public interest.

May we close this first half of our testimony by expressing our determination that this power operation should be conducted on a strictly self-liquidating, financially sound basis. When all the costs are fairly computed and when those costs indicate that rates must be increased in order to insure the financial integrity of the operation, then we will wish to be on record as advocating the necessary rate increase. Today a BPA rate increase would be inexcusable.

The second half of our testimony consists of a list or agenda of problems in connection with the Federal power program and our recommendation for the solution to these problems.

1. Legislative jurisdiction problems: It is recommended that Congress consider the reassignment of legislative duties so that general responsibility for each of the subjects of land resources, water resources and energy resources may be handled by an appropriate committee. Possibly one committee could supervise all three subjects.

2. Departmental disorganization: It is recommended that Congress create a Department of Conservation with two major divisions of land resources and water resources, as recommended in the minority report of the first Hoover Commission.

3. Disorganization of water resources agencies: It is recommended that Congress consolidate the water resources functions of the Corps of Engineers and the Bureau of Reclamation as recommended by the

majority report of the first Hoover Commission. This need not preclude continued service of Corps of Engineer personnel in this field.

4. Lack of planning: Neither the Congress nor the President has an adequate planning arm to place water, land, and energy conservation and development in proper perspective in our national economic development for the long run. An investigation is needed looking toward the establishing of such planning as a part of each agency concerned and for the consolidation of individual plans into a national budget picture. As is indicated in the enclosed address which I made to the Theodore Roosevelt Conservation Conference at Denver, October 2, 1959, no Federal agency is responsible for identifying and scheduling the needed conservation investment, which, over the next 50 years, should be at least a hundred billion dollars.

5. Lack of information on water resources: We endorse the Mansfield resolution, Senate Resolution No. 48, to provide for a nationwide study of electric power. Congress has never conducted a study of the future electric power supply needs of the Nation nor of the relationship of an adequate supply of low-cost electricity to our national economic welfare and security.

Mr. Gordon Clapp in his Wallgren lectures at the University of Chicago had begun to outline the problem. The last previous significant perspective was that of the giant power survey made for Gov. Gifford Pinchot by Mr. Morris L. Cooke in 1923.

The lack of an adequate supply of low cost power is a bottleneck of the American economy. This bottleneck is one of the main reasons why we in the United States must tolerate a standard of living which is not as high as that of Sweden and Switzerland, where the per capita use of electricity is greater.

Electric power itself is of prime national import. It is not merely an incidental, secondary stepchild of flood control, navigation, or irrigation.

7. Confusion in the reclamation laws: Possibly as part of the studies proposed by Senate Resolution No. 48 there should be included the drastic revision of the obsolete reclamation laws. The Reclamation Act of 1902 is 57 years old and even the modest buttressing done in 1939 is now 20 years out of date. A new look is needed.

We need a nationwide water resources agency. The 17-State approach should be abandoned. Secondly the concept of reclamation should be broadened to include sprinkler irrigation and drainage. Thirdly, the reclamation revolving fund should be junked as soon as the Congress can define a systematic, logical capital budget approach to the need for long range investment in water resources conservation and development. Fourthly, the various subterfuges for getting money into the reclamation revolving fund should be abolished, including the income from public lands, the use of the interest component and special taxes on power by artificially increasing power rates so as to subsidize irrigation.

8. Power mismanagement by the Bureau of Reclamation: It is recommended that all effort to improve the power management functions of the Bureau of Reclamation be abandoned in favor of a bodily transfer of the power marketing function. The Congress came to a wise decision in section 5 of the Flood Control Act of 1944 when it relieved the Corps of Engineers of power marketing functions. This same pattern should be extended to the Bureau of Reclamation.

12. Inadequacies of bureau-type agencies for power marketing: We recommend the amendment of the Bonneville Act to change the Bonneville Power Administration to a public corporation under the Government Corporation Control Act. We agree with the second Hoover Commission recommendation of the corporate form of organization for each of the marketing areas for which the Secretary of the Interior is responsible. We disagree with the President's budget message recommendation for placing these agencies on a revolving fund basis.

13. Power shortage in the Missouri Basin: We recommend vigorous prosecution of the hydro development program in both the upper and lower Missouri. Less than a fourth of the river is developed. Secondly, the Congress should consider authorization of at least an initial million kilowatt lignite-burning steamplant, perhaps for central North Dakota for baseload operation in connection with Missouri River peaking power. Thirdly, Congress should consider amending the Fort Peck Act along the lines we are recommending for the amendment of the Bonneville Act to establish a power marketing corporate agency for the Missouri Basin.

14. Interregional interties are needed. Because of the vast benefits to each region and the Nation from heavy capacity, high voltage interregional interties, we strongly urge Congress to provide for the financing on a self-liquidating basis of such facilities. The California intertie is but one example. The Bureau of Reclamation in its 1952 study showed others. As long ago as 1935 the Pacific Northwest Regional Planning Committee recommended both the California intertie and the southern Idaho 230,000-volt loop. Such interties can convert much of the power which the Government now sells on a sacrifice basis as dump power into high-class firm power worth at least twice as much per kilowatt-hour. Such transmission lines are simply good business.

15. Better planning of transmission facilities: The time for deciding certain transmission line questions is when the project report is prepared. Every report for a new power project should contain a statement as to how power is to be carried away from the project and also how construction power is to be provided. Wherever Federal transmission lines are involved, the normal procedure should be to build a Federal line to carry construction power in and later project power away from the new dam. With this in mind we urge that section 5 of the Flood Control Act of 1944 be amended so as to require the Secretary of the Interior to state in each project report of both his Department and the Army how power is to be handled. Whoever controls transmission controls the power—that is axiomatic.

16. Private utility refusal to wheel Federal power: The private utilities have been guilty of high-handed, monopolistic conduct against the Government. They have repeatedly refused to make available even their idle transmission capacity for the wheeling of Federal power to Federal agency loads or to other Federal customers. Congress should spike this practice by enacting legislation along the lines recommended by the Chudoff committee. Such legislation should refuse to any private utility any crossing permit over public lands unless the company agrees to wheeling at reasonable cost and under reasonable conditions to the extent of its surplus capacity. Further-

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more we feel no Federal power should be sold to any private utility which refuses to wheel. An even more fundamental approach to this problem is to define wheeling as a public utility function and by law declare such transmission of power to be a common carrier duty of electric companies. To this end we endorse in principle the Burdick bill and urge its introduction as well in the U.S. Senate.

17. Sweetheart power contracts: The Department of the Interior is signing new power contracts so fast that it will take years to study them. In the Bureau of Reclamation area particularly there has been much complaint that these contracts have the appearance of having been dictated by the private utility concerned. They are innumerable. The Comptroller General, who is no friend of public power, has complained about the Bureau of Reclamation being overly kind to private utilities in the sale of Shasta Dam power in California and the sale of Fort Peck power near the Glasgow and Great Falls, Mont., airbases. The Bureau has granted overly generous wheeling agreements in Idaho and Montana which have operated to the disadvantage of preference agencies. In southern Idaho, particularly, the Bureau personnel have been less than enthusiastic about enforcing the preference clause. We in the Bonneville service area have mentioned some of our problems in the extensive Chudoff committee hearings and will not repeat them at this time except by reference. The answer to these sweetheart contracts is to transfer out of the Bureau of Reclamation the function of power marketing. Additionally it might be well to limit the term of contracts and also to require each contract to lie before a committee of the Congress for a revocability period of not less than 90 days during which a public hearing can be requested. Additionally certain contracts should be placed under termination notice.

18. Unfair cost allocations: With today's perspective it is obvious that TVA's cost allocations have been conservative. Allocations by other agencies should be reviewed. It is apparent to any student of this field that in recent years the Federal Power Commission, the Bureau of Reclamation, and the Corps of Engineers have generally taken a point of view adverse to the power users regarding cost allocations. They have all bent to private utility pressure to jack up the price of power so as not to be competitive with private power prices. TVA with some success and BPA with virtually no success have resisted this unfair cost allocations pressure. The Northwest Public Power Association in 1955 protested the McNary Dam cost allocation and learned that the Federal Power Commission considered its authority in the field to be absolute and final with no right of public hearing or court review. We can document the whole McNary case.

We recommend that the function of cost allocation be placed in the marketing agency subject to approval by the President and not to be effective until the final allocation report has been before the Congress at least 90 days. The Trimble and Aspinall bills are steps in the right direction. The use of a 100-year economic life would be of much help. The proper evaluation of indirect benefits and costs could be another help.

19. Need for a definition of comprehensive planning: We endorse the Magnuson bill, S. 584, to define comprehensive planning and to require the Federal Power Commission to conform to the definition.

20. Capital budgeting needed: We endorse the principle of the Morse bill of the last Congress to adopt a capital budget whereby the Federal Government would distinguish between investment funds on the one hand and on the other hand its current expense.

21. Need for fisheries research: We favor adequate appropriations for fisheries research especially in the Pacific Northwest where the fish problem is a serious bottleneck of water resources development.

22. Hells Canyon Dam: We favor the ultimate construction of the Hells Canyon Dam, and meanwhile we urge that the damsite be reserved so as to permit such ultimate full development.

23. Nez Perce Dam: We favor the ultimate full comprehensive development of the Middle Snake River including the construction of the Nez Perce Dam when the fisheries question is decided. To this end we urge the conditional authorization of the Nez Perce Dam or the reservation of the site so as to preserve the right for future construction.

24. Unfair attacks upon REA: We favor the reorganization of the REA so as to be independent of the Secretary of Agriculture in respect to making REA loans, and secondly we urge retention of the 2 percent rate of interest pending such time as is needed by a subsequent administration to deflate the present high interest policy.

In conclusion, the rivers of the Nation, atomic power, and much of the fossil fuels are owned by the public. They are part of the commonwealth. The problem of Government is to build or facilitate the building of a bridge between the people and their God-given heritage of energy resources. This is no place for toll bridges and Wall Street monopolies. The Power Trust in America today is little different from what President Theodore Roosevelt and Gov. Gifford Pinchot said about it 2 generations ago. An improvement of the Federal power program along the lines of my testimony would not abolish or reform private power corporations, but it would at least help to clean up some bad conditions in Federal administration of the public resources. To this end the Northwest Public Power Association is anxious to help.

Thank you.

Mr. Chairman, this completes my statement. I can provide any further summary that you may wish. However, I know other witnesses are waiting.

Mr. STONG (presiding). Is there any additional point you wish to make?

Mr. NORWOOD. The California intertie would be a north and south intertie which takes advantage of river basin diversity and normal load diversity, but an east and west intertie has an additional important advantage that should be put in the record. That is the difference in time zones. The electrical load across the United States is in the form of a ripple, as women cook the evening meal. The difference in the time zone always provides a tremendous advantage to an east-west intertie because it enables the utility at one end to shift power when women are cooking first in the east, and then the power is shifted as the cooking load develops in a westward movement. This important peaking characteristic of the electric utility industry makes the east-west intertie very desirable and attractive economically, in enabling utilities to carry more load with less reserve capac-

ity. It is a strong argument to support Mr. Caulkins' point that some day the Bonneville Power Administration should be intertied with the Missouri Basin system.

The point of intertie, I think, would be a line of 230,000 volts starting at Anaconda, Mont., which is the eastern terminus of the Bonneville system, and go on eastward from there, tie in to the Canyon Ferry Dam, over to the Yellow Tail Dam, and then up to Miles City, where you are tied up into the Fort Peck Dam and the Bismarck 230,000-volt line.

I think such a line would probably have a very attractive economic ratio and would be one of the specific suggestions I would make with respect to the Missouri Basin part of this hearing.

In addition, our statement supports a high capacity steam plant for the Missouri Basin and ultimately the amendment of the Fort Peck Act so as to provide a power marketing corporation for the Missouri Valley.

Thank you very much.

Mr. STONG. The intertie you propose at Yellow Tail would also tie in to the western Wyoming-Colorado transmission system, would it not?

Mr. NORWOOD. Yes. The Wyoming line is the Lovell, Wyo., to Yellow Tail Dam line. That line is already built by the Pacific Power & Light Co. so there is that additional advantage. You would strengthen the tieup into Wyoming.

Mr. STONG. Do you know if it is correct that Bonneville power now goes as far east as Billings, Mont., as a result of an exchange arrangement with a private power company?

Mr. NORWOOD. It goes at least that far. The president of the Montana Power Co. testified on Hungry Horse power going into Billings, Mont., last summer. In addition, with the completion of the Yellow Tail-Lovell line, Bonneville power theoretically could go into the Wyoming system, and as far east as the western end of Nebraska. So we are approaching more and more in this country a nationwide grid system. The sooner we do it, the better off the country will be.

Mr. STONG. Thank you, Mr. Norwood.

Mr. NORWOOD. Thank you, sir.

Mr. STONG. The next witness is Mr. Alex Radin of the American Public Power Association.

While you are getting ready, Mr. Radin, I would like to put in the record a letter to Senator Murray from Mr. Fredrickson, planning coordinator of the State water commission in North Dakota, requesting permission that a statement of Hon. John E. Davis, Governor of North Dakota, be admitted into the record. Senator Murray has granted that request.

(The statement referred to follows:)

NORTH DAKOTA STATE WATER CONSERVATION COMMISSION,
Bismarck, N. Dak., February 13, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate.

(Attention of Mr. Stong.)

DEAR SENATOR: The Honorable John E. Davis, Governor of North Dakota, has requested me to attend your committee hearings on Federal power generation and marketing, with special attention to the Missouri River Basin, February 13–14, 1959, as his representative.

Permission is hereby requested for the filing of a statement by the Governor before completion of the hearings.

Sincerely yours,

FRED J. FREDRICKSON,
Planning Coordinator,
State Water Conservation Commission.

Mr. STONG. I also have a telegram that is requested to be put in the record, to Senator Murray, from Mr. Robert K. Garrity, international representative of the Brotherhood of Electrical Workers, Chicago, Ill.

(The telegram referred to follows:)

OMAHA, NEBR., *February 15, 1959.*

SENATOR JAMES E. MURRAY,
Senate Office Building, Washington, D.C.:

This is to advise that Nebraska Public Power System, Columbus, Nebr., has again refused to recognize a majority union of its employees. Further, Nebraska Public Power System and Consumers Public Power District of Columbus, Nebr., are engaged in a campaign of opposition to labor bill in Nebraska Legislature that would permit recognition of employee unions. This information may be of interest to you and Interior Committee before whom the mentioned Nebraska Public Power and REA representative from this State are now appearing.

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, AFL–CIO,
ROBERT K. GARRITY,
International Representative.

Mr. STONG. You may proceed.

STATEMENT OF ALEX RADIN, GENERAL MANAGER, AMERICAN PUBLIC POWER ASSOCIATION, WASHINGTON, D.C.

Mr. RADIN. Thank you, Mr. Stong.

My name is Alex Radin. I am general manager of the American Public Power Association, which has headquarters at 1025 Connecticut Avenue NW., Washington, D.C.

The American Public Power Association is a trade organization representing more than 1,000 local publicly owned electric utilities, principally municipally owned electric utilities, in 43 States and Puerto Rico. The member systems of this association have a direct interest in policies concerning the marketing of federally generated electric power, since a number of these local utilities purchase all or part of their power supply from the Federal Government.

I wish to commend the committee for scheduling these hearings to obtain full information about the future power marketing situation in the Missouri Basin and in other areas.

Since other witnesses, including leading officials from the areas directly concerned, are testifying on many facets of the problems they face, I will limit my statement to three opportunities for more efficient and more widespread marketing of Federal power to benefit more people.

1. The need for construction by the Bureeau of Reclamation of a transmission line and related facilities in Iowa to permit preference customers in western and southwestern Iowa to make fuller use of Missouri Basin power.

2. The need for firming up Missouri Basin power supply to make more power available on a year-round basis and to bring additional revenues from the sale of Missouri Basin power.

3. In another part of the Nation the need for funds for the Bureau of Reclamation and Bonneville Power Administration to plan the construction of two 345,000-volt transmission lines to interconnect the Columbia River power system and the California Central Valley project.

IOWA TRANSMISSION LINES

It has been proposed that the Bureau of Reclamation construct a 161,000-volt transmission line from its Sioux City substation to load centers near Clay, Denison, Harlan, and Creston, Iowa. The need for this transmission line and related facilities, including substations, is clear. Such a line would make Missouri Basin power available to a number of municipal electric utilities and rural electric cooperatives which otherwise would be deprived of their share of this federally generated power.

These preference customers have applied for allocations of Missouri Basin power which will be available in the 1960's. Sixteen of the municipal electric utilities which have applied for Missouri Basin power allocations do not now receive Bureau power. The proposed transmission line would make Missouri Basin power available to these small municipal systems and to rural electric cooperatives which have applied for an additional 108,000 kilowatts of firm power. At present the preference customers in Iowa get about 62,000 kilowatts of firm power from the Bureau of Reclamation, but the growing power needs have led to a request for a total of about 170,000 kilowatts.

The requests of these municipal systems are for small amounts of power, the largest request being for 5,000 kilowatts. The size of these requests illustrates that these power systems are relatively small, and that their own local generating equipment must necessarily be small and comparatively inefficient. Missouri Basin power is vital in enabling these small municipal plants to keep their electric rates at a reasonable level. The proposed transmission line would make available to these municipal systems quantities of power which, though not large in number of kilowatts, are of great importance in meeting the growing needs of their customers.

On the basis of the applications which have been made for Missouri Basin power, it has been estimated that that the Bureau of Reclamation would market at least $2,400,000 of power per year in Iowa. These funds would repay the cost of the line, and provide additional revenues for the repayment of other Federal power facilities in the Missouri Basin.

Our association's legislative committee, meeting in Washington on February 6, unanimously passed a motion favoring this transmission line to deliver Bureau of Reclamation power to the municipal and rural cooperative power systems in the eastern division of the Missouri Basin.

FIRMING UP MISSOURI BASIN POWER

I would now like to turn to the proposed allocations of Missouri Basin power to preference users. These allocations, as I understand them, would be based on 80 to 85 percent of these systems' applications for 1963 requirements. These allocations are based on basin power available under less than median water conditions.

However, it seems to me that the Bureau of Reclamation could in part eliminate these deficiencies, and make much more efficient and economical use of the Missouri Basin resources, by firming up the potential power supply which is available from projects in the basin.

There will be nearly 1,600,000 kilowatts of capacity in the Fort Peck, Garrison, Oahe, Fort Randall, and Gavins Point generators upon completion of all these plants, and assuming average water conditions. The amount of marketable firm power is around 1 million kilowatts, leaving a gap of some 600,000 kilowatts between generating capability and the amount of firm power being marketed. While some of this 600,000 kilowatts will be used for project pumping, for peaking, and for sale as dump and secondary energy, it appears that a tremendous additional amount of firm power could be marketed if the Bureau made arrangements to supplement hydroelectric power generation with steam generation.

I urge that the Bureau of Reclamation immediately initiate studies to compute the benefits to the Government and to the preference customers of firming up Missouri Basin power to make full time, efficient use of the hydroelectric power capacity. There are several alternate means by which this firming up could be achieved.

For example, the combined summer peakloads of the Nebraska Public Power System and the Omaha Public Power District will exceed the winter peakloads of the utilities by 479,000 kilowatts in 1965. On the other hand, the peak demand of the preference customers in the other States of the Missouri Basin occurs in the winter. It would certainly appear that at least some of the idle winter capacity of the Nebraska utilities could be used to firm up the Bureau of Reclamation's power supply at least to median water conditions.

I am confident that Bureau studies of this and other alternatives would disclose sizable benefits to the Government and to the preference customers.

COLUMBIA BASIN-CALIFORNIA INTERTIE

There is one other significant opportunity for great additional benefits from Federal power marketing which I would like to discuss with the commitee. This is the proposed intertie between the Bonneville Power Administration grid system and the California Central Valley project.

This California intertie was envisioned in 1935, was recommended in 1950 by the Defense Power Administration, and was found favorable in 1950 and 1953 in reports prepared by the Federal Power Commission.

Indications are that this interconnection could be most efficiently achieved by means of two Federal transmission lines of at least 345,000 volts each, running from the Columbia River around The Dalles and John Day Dams to the San Francisco area by way of the Sacramento area. These lines should carry at least a million kilowatts of power.

Studies indicate these lines would have a benefit-cost ratio of about 5 to 1, a clear indication of the economic soundness of the proposal. H. Zinder and Associates, consulting engineers, in a report to the State of Oregon Public Utility commissioner last December, said that if the intertie—

had been been placed in operation by the fall of 1954 as supposed in the FPC and the BPA studies, the sale of dump energy to California would have completely amortized by now the investment of about $16 million in such facilities.

If these lines had been in operation last year, Bonneville Power Administration would have had a surplus estimated as high as $6 million last year, instead of a $2.5 million deficit.

The Zinder report, prepared by Sol E. Schultz, former Bonneville Power Administration chief engineer, summarizes the case for this line:

Revenues from the sale of dump energy represent only one of a number of highly important benefits to be realized from power interties with California. Among the most noteworthy are the following:

1. The interconnection would promote the conservation of natural resources. The annual utilization of as much as 3 billion kilowatt-hours of otherwise wasted hydroelectric energy each year would result in an annual saving of 5 million barrels of oil.
2. It would increase the dependable power supply capacity in both California and the Northwest because of the diversity of loads and resources between the areas. It is believed this factor alone would justify a major investment in tie line facilities.
3. It would provide reserves against power emergencies in either of the areas. One only has to recall the incident of March 14, 1952, at Grand Coulee Dam when the entire plant was threatened with a protracted shutdown to appreciate how important the tie line might be in similar circumstances.
4. It would have real value to meet the exigencies of national defense.

The construction of these transmission lines would bring great benefits both to the Pacific Northwest and to California. Bonneville Power Administration, by being able to sell dump power, would greatly increase its revenues each year and would not have to waste the vast quantities of electricity which now must go unused. There is a ready market in California for dump power, for use by the publicly owned electric utilities, by the Federal Government, and by private users. In addition, the lines would be a two way street with power available from California to the Pacific Northwest in times of emergency power conditions on the Bonneville system.

Needed this year are appropriations of $100,000 to the Bonneville Power Administration and $100,000 to the Bureau of Reclamation for engineering planning of these two proposed Federal transmission lines. Our association's legislative committee, at its meeting earlier this month, unanimously recommended that the Congress appropriate funds to initiate engineering planning on these lines.

I hope that your committee will recommend intensive study and analysis of these three important opportunities for widespread public benefits from the marketing of Federal power—the Iowa transmission line, the firming up of the Missouri Basin power, and the Bonneville-California intertie. Each of these proposals will be good investments for the Government, will be self-supporting, and will spread the benefits of federally generated power to more people.

Although I presume that separate hearings will be held later on Senate Resolution 71 by Senators Murray, Neuberger, and Carroll, I would like to take this occasion to indicate our association's wholehearted support of this resolution. The rapid strides being made in the development of extra high-voltage transmission—particularly in the U.S.S.R.—and the trend toward larger and larger generating stations emphasize the need for a comprehensive study which would, ac-

cording to Senate Resolution 71, "assure development and organization of bulk power supply to enable the United States to maintain an expanding economy, an increasing standard of living for all its people, and its position of strength in the world situation."

Mr. Stong, I might say that this statement covers three points as you can see. We support the transmission line in Iowa to serve preference customers in the western part of that State, as discussed by Mr. Caulkins and other witnesses. I don't think any previous witness has put into the record a map of this line. It might be helpful to include it.

Mr. Stong. Thank you.

Mr. Radin. I might say that the importance of this line as far as our organization is concerned is that there are a number of municipally owned electric utilities all of which are quite small, which would be served by this line, and without this line they have no means of obtaining Bureau of Reclamation power. They are all quite small and for them to continue to install small generating capacity consisting of diesel engines is quite uneconomic by comparison with the Bureau of Reclamation power which they could be receiving from this line.

So our first point is to support the construction of this transmission line in Iowa.

Our second point is to emphasize the importance of firming up Missouri Basin power. A number of witnesses have discussed the discrepancy between the amount of power being made available to the preference customers in the Missouri Basin as compared with the installed capacity of the projects in that area. We feel that there are several alternative means of firming up this power which would go far toward meeting the requirements of the preference customers, which requirements presently would not be met under the proposed allocations of the Department of the Interior.

One of the most immediately profitable means that would appear to meet this problem would be to use the excess capacity which the Nebraska Public Power System and the Omaha Public Power District have during the wintertime when the demands are highest in the other States in the Missouri Basin. By 1965 the winter peak loads of the Nebraska Public Power System and the Omaha Public Power District will exceed their summer demands by about 479,000 kilowatts. We feel that the Interior Department should look into the means of using this capacity to firm up the requirements of other preference customers in the Missouri Basin.

The third point, in summary, is to support the Columbia Basin-California intertie which Mr. Norwood has just discussed. In view of the extent of his testimony on this, and also in view of the fact that a request has been made for further hearings on this subject, I see no need to go into it further at this time except to mention our support of this intertie which we believe is fully justifiable on an economic basis.

In closing I also want to indicate our support of Senate Resolution 71 by Senators Murray, Neuberger, and Carroll, which we think should be adopted by the Senate as soon as possible.

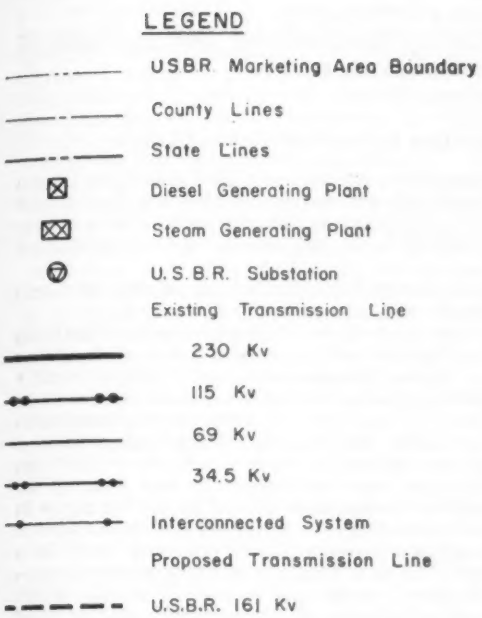
That completes my statement.

Mr. Stong. Thank you, Mr. Radin.

TRANSMISSION LINE
U. S. B. R.
MARKETING AREA
(IOWA)
IOWA COMMITTEE
MISSOURI RIVER POWER

2307-X7

Jan. 30, 1959
Revised Jan. 26, 1959



COMMITTEE MEMBERS

	COOPERATIVES	MEMBER CONSUMERS
C.B.P.C.	Corn Belt Power Cooperative	30,000
C.I.P.C.O.	Central Iowa Power Cooperative	30,000
G.R.E.C.	Glidden Rural Electric Cooperative	1,700
L&O	L & O Power Cooperative	3,000
N.I.P.CO	Northwest Iowa Power Cooperative	21,000
S.W.F.	Southwestern Federated Power Cooperative, Inc.	14,000

MUNICIPALS - POPULATION 1950 CENSUS

Alta 1348	Lake Park 924	Primghar 1152
Anita 1112	Laurens 1556	Remsen 1280
Atlantic 6480	Lenox 1171	Rock Rapids 2640
Coon Rapids 1676	Manilla 1035	Sanborn 1337
Corning 2104	Manning 1801	Shelby 592
Denison 4554	Mapleton 1857	Sibley 2559
Graettinger 1016	Milford 1375	Sioux Center 1860
Harlan 3915	Onawa 3498	Stanton 570
Hawarden 2625	Orange City 2166	Villisca 1838
Kimballton 428	Paullina 1289	Woodbine 1304

Are there any other witnesses here who desire to testify? We originally had an additional two or three requests from Iowa. I understand those gentlemen do not care to testify.

A statement has been submitted by Congressman Don L. Short, of North Dakota, which will be included in the record.

(The statement referred to follows:)

STATEMENT BY CONGRESSMAN DON L. SHORT, OF NORTH DAKOTA

Mr. Chairman, members of the committee, my name is Don Short, and I am from Medora, N. Dak. As one of the Congressmen from North Dakota, I would like to register with your committee my thinking on the matter of power allocation by the Bureau of Reclamation, which is the subject under consideration, I understand, here today.

Since several of the witnesses have covered in detail some of the problems involved, I will not attempt to duplicate what has already been said.

I want to point out what seems so obvious to those of us who are familiar with North Dakota and what seemingly is disregarded in some of the considerations involved in the allocation of power. North Dakota feels, and I believe rightly so, that she by virtue of having contributed more than half a million acres of her best river bottom land, has a very just claim to her fair share in the benefits to be derived from the dams constructed in the big Missouri River Valley.

Few people seem to have a proper realization of what my State contributed in supplying the land area flooded by the Garrison Reservoir, and part of the Oahe Reservoir. The Garrison Reservoir floods nearly half a million acres in total by itself, and the Oahe Reservoir extending into North Dakota floods almost half that much total area. Having spent my entire life living on a ranch in a river valley in western North Dakota, I have a very real knowledge of the economic loss involved when that much river bottom land is lost. Not only is the production of the flooded area lost, but the value of the adjacent grazing land is materially reduced through the loss of winter feed production and shelter facilities.

The people of North Dakota have, in my opinion, been very generous in recognizing their obligation to contribute to the overall welfare of the entire Missouri Valley program. I believe it is no more than fair that North Dakota should receive some preference in the allocation of power and eventually water, as compared to States who have contributed nothing. Certainly in the matter of the allocation of public power, all potential users are justly entitled to consideration. However, it would seem that by virtue of location and contribution to the project, our State is entitled to a reasonable preference.

Thank you, gentlemen, for giving me the opportunity to present my views.

Mr. STONG. A statement has also been submitted by Mr. Angus McDonald of the National Farmers' Union which will be included in the record.

(The statement referred to follows:)

STATEMENT OF ANGUS MCDONALD, COORDINATOR, DIVISION OF LEGISLATIVE SERVICES, NATIONAL FARMERS' UNION

Mr. Chairman and members of the committee, I am appearing here to present our views in regard to allocation of power in the Missouri Basin and related matters. It appears that there is widespread complaint in the basin in regard to tentative allocations which the Bureau of Reclamation projected at the December 10–11, 1958, hearing.

The Bureau stated at the time that it would have upon completion of existing structures only about 1 million kilowatts. Since total capacity will be about 1,600,000 kilowatts, obviously, there will be a great deal of seasonal, secondary, and dump power involved.

The problem, it appears to us, is primarily one of planning and management. If the cooperatives, the municipals, and the Bureau could get together on long-range plans, the 600,000 kilowatts of nonfirm power could probably be firmed up. This necessitates the Bureau assuming a utility responsibility. It should, in other words, make every effort to assist the cooperatives in fulfilling their power needs.

Testimony presented at this hearing indicates that the Bureau refuses to assume a utility responsibility, and furthermore, is carrying out policies which are uneconomical and which actually penalize the cooperatives. According to a letter introduced into the record by V. T. Hanlon, manager, East River Electric Power Cooperative, the Bureau is carrying out wheeling arrangements "without regard to power displacement." It would appear that such a policy was designed to put an unnecessary burden on the cooperatives. Not only does the Bureau throw roadblocks in the way of the cooperatives in regard to economical use of power but its policies as reflected here in Washington prevent the building of any steam plants.

As a number of witnesses pointed out, the problem in the east Missouri Basin can be resolved if hydroelectric power is used primarily for peaking and thermal power as firm power. This arrangement will necessitate, however, the building of thermal plants. Since there are hundreds of billions of tons of lignite coal in the area, it is obvious that the plants should be built at the earliest possible time. We, therefore, recommend that the committee consider a recommendation to the Congress which would result in the authorization and building of steam plants at appropriate sites.

Numerous witnesses pointed out that because of allocations, announced by Under Secretary Aandahl, that they expect to be experiencing severe shortages of power by 1963 and that some of them actually have insufficient power at the present time. Power shortages in the basin will become widespread and critical in the next few years if something is not done to alleviate the situation resulting from the unwise policies of the Bureau and the Army Engineers.

We urge the committee to take steps to see that the O'Mahoney-Millikin amendment which provides that the power needs in the upper part of the basin be satisfied is enforced. According to our information, the Army Engineers have been violating it over a long period of time. As a result water to which power users are rightfully entitled is being released for navigation purposes. Power users, under the law, have a right to this water. The Congress should explicitly direct the Army Engineers and the Bureau to so manage the water in the basin that a maximum amount is available for power.

Finally, we urge the committee to initiate a study which would:

(1) Investigate the possibility of the Government building experimental nuclear plants as well as thermal plants.

(2) Direct the U.S. Bureau of Reclamation to buy the low-cost energy whenever necessary and carry out a transmission policy which would give the cooperatives firm power to which they are rightfully entitled.

Mr. STONG. If there are no other witnesses, the hearing will stand in recess.

(Thereupon at 11:50 a.m., the hearing was recessed to reconvene at the call of the chairman.)

FEDERAL POWER MARKETING PROBLEMS

THURSDAY, MARCH 5, 1959

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 3110, New Senate Office Building, Senator James E. Murray presiding.

Present: Senators Murray and Gruening.

Also present: Benton J. Stong, professional staff member.

The CHAIRMAN. The hearing will come to order, please.

On February 13, 14, and 16 this committee heard a number of witnesses from rural electric cooperatives and municipal and district power agencies. They discussed their power supply problems which relate to the Department of Interior power marketing agencies.

Assistant Secretary of Interior Fred G. Aandahl has been invited here today to discuss with the committee plans to allocate power in the eastern Missouri Basin power marketing area, where new generating capacity is to become available in the next few years.

It is already apparent that the quantity of firm power now being allocated to preference customers in the area will not meet their requirements within the next few years. A preliminary study of the allocation made public in December indicated the quantity of power to be allocated would meet 88 percent of the customers' requirements in the winter of 1963–64. It is reported that the current plan—on which Mr. Aandahl is to advise us this morning—will meet an even smaller percentage of the total of applications for power made by the preference customers.

More than 20 years ago, the Congress enacted the Rural Electrification Act, making it a Federal program to get electric service into the rural areas of the Nation. This is still the law of our land. The Rural Electrification Administration has primary responsibility for making rural electrification loans and promoting the program, but the objective of the act is binding on the whole Government—and all of its departments.

Rural electricfication was slow in being established in the upper Missouri Basin. There were no sources of bulk power at rates which would make rural electrification economically feasible. Construction of the Missouri River dams made the chartering of REA cooperatives possible in the area in accordance with the Government policy. Continued compliance with the Federal policy of assuring electricity in rural areas means assisting these cooperatives in getting bulk power supply in adequate amounts, at lowest possible rates. Many of the cooperatives are in extremely sparsely settled areas. Some have less than two customers per mile of line. Unless

they can get power at reasonable cost, their economic feasibility and their ability to pay back Federal loans may be impaired and the Federal rural electrification policy will be defeated.

During the hearings on February 13, 14, and 16, REA and other preference customer witnesses testified that the Bureau of Reclamation, in some of its policies and actions, obstructs rather than assists the preference customers, including rural electric cooperatives, in obtaining power supply.

Some of the REA and municipal customers in the upper basin feel that the Bureau should vigorously insist that power be put ahead of navigation in planning water releases in the basin, in accordance with the O'Mahoney-Millikin amendment. They feel that more of the Government's hydro should be firmed up, by rescheduling water releases or by development of thermal power sources to carry part of the winter load. They have testified that the Bureau will not recognize displacement to facilitate exchange of power among preference customers in the upper basin, and that other policies obstruct rather than assist the preference customers with their power supply problems.

Subsequent to the hearing, I had prepared a series of questions which had been raised in regard to the Missouri Basin marketing procedures and policies. These were submitted to the Secretary last Friday for his reply.

Our hearing today is primarily to have Secretary Aandahl advise us of the Bureau's current plan for allocating the new power in the Missouri Basin, and to explain the procedures and policies followed by the Department. In the course of his statement, I hope he will deal with the questions which were raised.

Three additional witnesses have requested to be heard today—Mr. Collin Raff, vice president of the Montana Power Co.; Mr. Charles Robinson of the National Rural Electric Cooperative Association; and Mr. R. L. Schacht of the Consumers Power District of Nebraska.

We will hear from Secretary Aandahl first.

STATEMENT OF FRED G. AANDAHL, ASSISTANT SECRETARY, *DEPARTMENT OF THE INTERIOR*

Mr. AANDAHL. Thank you, Mr. Chairman.

Mr. Chairman, I have a brief statement that I would like to read.

The CHAIRMAN. You may proceed.

Mr. AANDAHL. This statement deals primarily with the procedure we have followed in 1954 in making that allocation and the steps that have been taken under the present plans for allocating the new amount of power. The specific questions which you submitted have been reviewed and I am ready to discuss them with you, but I do not have answers to them as part of the prepared statement.

The CHAIRMAN. You may proceed in any manner you wish.

Mr. AANDAHL. As the initial phase of preparation for the allocation of power initially available in the eastern division of the Missouri River Basin project, a request for application for power from customers was issued on October 1, 1953. Applications were to be received until January 1, 1954, but a few applications bearing later

dates were made. All applications were considered as applications for available power.

The eastern division of the Missouri River Basin project was originally divided into two parts. The eastern area, where the allocation was made, comprised all of South Dakota, all of North Dakota except a small portion in the northwestern area, and portions of Minnesota, Iowa, and Nebraska.

Initial requests for power from applicants showed the amount of power, the date and delivery points desired. Additional information was obtained in visits to applicants by Reclamation employees.

The applications received for the 1954 allocation totaled 894,107 kilowatts including nonpreference applications of 132,280 kilowatts. The power available for allocation from Federal powerplants was 531,000 kilowatts. Of this amount 340,625 kilowatts covered power commitments in existing contracts or in negotiation, leaving only 190,375 kilowatts available for allocation.

At the initial period of the operation of the Federal powerplants in 1954, there was only limited transmission capacity for transfer of power to the South and East. The available transmission capacity resulted in an ability to supply in full the estimated 1958 requirements in North and South Dakota and northern Minnesota.

Incidentally, that allocation at that time was made on the basis of the estimated 1958 loads.

The remaining power was then allotted to preference customers in the remaining marketing area (Nebraska, southern Minnesota, and western Iowa) in a ratio to the sum of their loads. This gave these customers an allocation equal to 50 percent of their 1958 needs.

Again I should add that the Nebraska Public Power System was not considered in that allocation because there had previously been negotiated with them a contract for 100,000 kilowatts. Their requirements were met to that extent.

In September 1956, due to interconnection operation difficulties between the Missouri River basin system and the Northwest Power Pool, it became necessary to divide at Fort Peck powerplant the overall transmission system into two electrically separated power systems. Thus the portion of Montana and North Dakota in the western area which was east of Fort Peck was added to and made a part of the eastern area. By this area division, a portion of power production of Fort Peck was added to the eastern area resource.

On August 5, 1957, it was announced that applications would be accepted from customers for additional power to be produced in the Missouri River basin. The additional power will be generated at the new powerplant of Oahe Dam, the second powerplant of Fort Peck, and the fourth and fifth units at Garrison Dam. The original inclusion of the powerplant at Big Bend Dam has been deleted since this dam is still in the planning stage.

The deadline for applications for power was established as of July 1, 1958. There have been several applications made since that time, however, and these are also being considered in the allocation of the power. The initial applications specified the applicant's needs and requests in 1961, 1963, and 1965 for firm power, the firm seasonal power,

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secondary and/or dump energy as appropriate. The current allocation will be only for firm power and consideration of remaining types of power will be made at a later date. (A copy of the application form used by the regions is attached.)

(The application form referred to follows:)

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION REGIONAL OFFICE, REGION 7,

BUILDING 46, DENVER FEDERAL CENTER, DENVER 2, COLO.

APPLICATION FOR ELECTRIC POWER

Name of Applicant _____
Address of Applicant _____
Name and Title of official to whom correspondence should be directed _____

1. The above-named applicant hereby applies for allotments of firm power from the supply to be marketed by the Bureau of Reclamation which, with previous allotments to the applicant, if any, will total the following amounts in the winter of 1961, 1963, and 1965.

Year	Amount applied for in kilowatts
1961	
1963	
1965	

2. The total power requirements of the applicant's system supplied from all sources in the years 1961, 1963, and 1965 are estimated to be as follows:

Year	Annual system peak demand in kilowatts	Annual energy requirement in kilowatt-hours
1961		
1963		
1965		

3. Is the applicant interested in an allotment of summer seasonal firm power to be available only during the summer navigation season, under the following condition? (If interested, you will be requested to make more specific application at a later time, but prior to July 1, 1958, after consultation with Bureau representatives.)

_____ (*a*) If applicant receives the full allotments of firm power that it has applied for above.
Yes or no

_____ (*b*) If applicant is allotted less firm power than it has applied for above.
Yes or no

4. Is the applicant interested in purchasing nonfirm power (secondary or dump energy) in addition to firm power and/or seasonal firm power services?

_____
Yes or no

By _____
Title _____
Date _____

Mr. AANDAHL. A decision has been made to use 1963 application and estimated load data in the allocation as the amounts requested for that year more nearly correspond to the power available for al-

location. The first analysis of data indicated that the total 1963 loads of preference applicants was 1,092,558 kilowatts, after elimination for duplication, for certain existing generation equipment, and for loads outside the marketing area. The estimated amount of firm generation from the Federal powerplants is 1,033,000 kilowatts. There was deducted from this amount 12,184 kilowatts as a reserve for prospective loads of Federal establishments plus an unassigned reserve of 30,000 kilowatts. This leaves for allocation to all preference customers approximately 990,000 kilowatts of firm power.

Incidentally, that includes and overlaps the allocation that was made in 1954. We are looking now at the overall requirements and whatever was done in 1954 just becomes an inherent part of the current picture.

The Bureau of Reclamation is currently supplying them the 1958 allotments, which in many cases are less than their loads, under contract to preference customers. The new powerplants will not begin to produce power until 1960 and the full amount of any allocation will not come until 1965. Thus it is apparent that customers' generation of other sources of power will be essential to meet in part the full present and the growing power needs of preference customers.

The preference customers in the marketing area have an installed generating capacity of 1,475,903 kilowatts—in most cases this is nameplate rating. This amount of capacity added to the power to be allocated through the Bureau of Reclamation of 990,000 kilowatts makes a total of 2,465,903 kilowatts. This generating capacity is of course exclusive of capability of private utilities systems in the area.

If the Federal power were allocated to preference customers on the basis of load disregarding their generation, we could allocate only 54 percent of their estimated 1963 requirements of 1,850,000 kilowatts.

Most of the preference customer generation is good and has been installed in the size and type needed to meet the specific requirements and problems of each individual customer.

One of the major problems encountered in finding an equitable method of allocating the Federal power has been to find the means of determining the amount of customer generation that should be deducted from each customer's estimated 1963 load to reach a basis for making the allocation.

In November of 1958 we forwarded to each applicant an analysis of one possible method of allocating the available power. A conference was arranged with these customers on December 9, 10, and 11 at Sioux Falls, S. Dak., to discuss problems in preparing the analysis and problems of the customer under the analysis. It was pointed out at this meeting that the question of considering efficient customer generation was a very complex one and had not been solved satisfactorily.

I might say, Mr. Chairman, that at the first day of the Sioux Falls meeting one of the first questions that was asked me from the conference floor was what formula did you use in determining how much of the customer's own generation should be recognized as a deduction from his estimated load in determining the basis from which we would make the allocation of Federal power.

I had to answer him that we didn't have a formula worked out. We were looking for information at the conference.

For example, in Nebraska there were included as efficient customer generation, two sizable plants still on the drawing board. The plant contemplated for Nebraska Public Power System was needed to satisfy a summer peak demand larger than the winter peak.

We are making the allocation on the basis of the winter peak. A plant for the Omaha Public Power District was also in the planning stage. Many customers were listed in the analysis with a zero in column 5 of the analysis—Bureau adjustments. There are 126 of these applicants with generation amounting to 482,669 kilowatts. This generation was not taken into account in making the analysis. Our major problem was what to do with these exceptions of customer-owned generation. Where customer generation was recognized in the analysis we deducted in each case the largest unit as standby reserve.

Instead of using the customer's entire amount of generation, we deducted the amount of the largest unit.

Out of the discussions of this and other problems at the Sioux Falls meeting came a possible alternative method of power allocation. A reanalysis of customer data has been supplied to customers which utilizes as a base for allocation the customer's 1963 application for power. Instead of using the estimated load, we turned around and took as the starting point the amount of the customer's application, providing that it is not greater than the estimated load for that year. No deduction from load was made for customer generation. The main difference between the two methods is that in the first analysis, the base for possible allocation was the customer's estimate of his 1963 adjusted load to be met from Bureau power. The present revised analysis uses as a general base the customer's application for power. The revised analysis thus uses the customer's determination of his power need at the time of application. He apparently made an estimate at that time of the extent to which he could advisedly use his own generating facilities. This approach might be better than any valuation of customer power needs that we might work out as being applicable uniformly to all customers.

The Federal loads considered in the allocation were granted 100 percent of 1963 needs before allocation of the remaining power to remaining applicants.

It has been our purpose in these two allocation studies, dated November 14, 1958, and February 20, 1959, to develop a formula and apply it uniformly to all preference applicants for power throughout the marketing area as established in 1954. The analysis dated February 20, 1959, appears to be preferable.

May I add, Mr. Chairman, that up to the present time we have not made an allocation. We are looking for information. We want to be reasonably confident that we have arrived at the most equitable basis that can be found for the allocation of this Missouri Basin power among the preference customers.

You will note in glancing at the analysis that none of this firm power is to be allocated to nonpreference customers. We are dealing entirely with relationship between and among preference customers.

That concludes my statement and I will be glad to enter into any discussion that you wish.

The CHAIRMAN. Have you any questions, Mr. Stong?

Mr. STONG. I take it you are still considering, then, a basis for the application or the allocation and you have not determined to go ahead with this allocation at this time.

Mr. AANDAHL. No, we are looking for more information. We feel that this is a very good analysis and will be very helpful in making the allocation. We do want to get all possible information before we approve an allocation that we will expect to stand by.

Mr. STONG. One procedure that was suggested to me, and I assume you may have considered it, was a study of the efficient generation of the various preference customers, and an allocation based on deduction of generation where the incremental cost of the generation was less than the Bureau cost; where the fuel cost and cost of operating would give them a lower expense for their generation than the Bureau's cost.

Mr. AANDAHL. Mr. Chairman, I would like to ask Charlie Baker and Don Campbell to testify. Mr. Baker is one of the engineers who has been very active in this study. I would like to have them join me at this table and perhaps one of them may have some detailed information that he could use in responding to that question.

Would you state your question again, please?

Mr. STONG. Whether or not you have considered deducting efficient generation—efficient being generation where the incremental cost of fuel and operation would be less than the cost of the Bureau power—from each customer's total requirement.

Mr. BAKER. In the first analysis that we presented at the Sioux Falls meeting in which the Secretary has indicated there were deductions made from the customer estimated loads to cover that part of his load which could be handled by his own efficient generation, we tried to develop a formula that could be used uniformly in determining what was efficient generation. It was very difficult to attempt to get any standard formula that could be used across the board. We did, however, in our November 14 analysis eliminate from consideration as efficient generation all diesel electric generation on the basis that generally the cost of fuel for production of power in a diesel generating plant was always rather high. We did not survey that for each individual plant, but just as a general basis we eliminated as efficient generation all diesel.

We also eliminated generally all steam capacity units of approximately 3,000 kilowatts or below, on the basis also that generally in the industry small steam units are relatively inefficient and have resultant high generating cost.

On remaining generation, we considered that the units which we had by experience reason to believe were reasonably efficient as efficient generation but in making a tentative deduction for such generation from load, we eliminated the largest unit that a customer had in his generating system in order that that unit could be considered as reserve. That was the basis for those adjustments for efficient generation which were made in our first analysis in November.

Mr. STONG. It would be a pretty difficult task to gather together operating data, I take it, to determine the actual cost of production.

Mr. BAKER. As the Secretary indicated, that was one of our extremely difficult problems. Time and available information simply did not permit getting that kind of information.

Mr. AANDAHL. I might add there that there is some question about the advisability of trying to apply a uniform approach across the board in a question of that kind simply because individual applicants have a variety of circumstances and conditions under which they are generating and selling power.

A formula that might fit quite well under one set of circumstances does not exactly do the job under the other set of circumstances. That was one of the problems that we had.

Mr. STONG. In this new allocation, the applications were frozen as of a fixed date, and there has been some complaint that some of the applicants, in making their applications, disregarded their generating capacity and made application for power that they could generate, if necessary, while other applicants gave consideration to their generating capacity and applied only for the additional power they needed. There were two bases on which the applications were made to you.

Have those been adjusted to uniformity?

Mr. AANDAHL. No, they have not. If we were going to attempt to adjust them to uniformity then we would have to resolve this question that you have just posed, as to what constitutes the efficient generation.

By not touching that problem and using the determination that was made by each applicant we are depending on his judgment as the determining factor on whether or not he wanted to use this generation.

I recognize that in the second analysis there is some weakness in uniformity because of that particular circumstance. But the minute we try to solve it we run right into the same problem that we had in the first analysis.

Mr. STONG. One or two of the municipalities contend that it is not a matter of difference in judgment but difference in understanding of the basis of the application. They have contended that there should be a reopening of their applications so they could be given an opportunity to make an application on the same basis as others did.

Mr. AANDAHL. I would say if we reopen the application we could not use the customer's application as the basis of making an allocation. There would just be such adjustments there that we would not have anything left to work with. Then we would have to go back to the estimated load and completely resolve for ourselves the problem of the amount of the customer's efficient generation that would be used.

Mr. STONG. Could you estimate the number of customers who gave consideration to their generation in applying and the number who did not?

Mr. AANDAHL. I do not have the number in mind. I think we could run through the analysis and get a rough estimate of it.

Mr. STONG. Even a rough estimate of the number of applicants who included or gave consideration to their generation.

Mr. AANDAHL. I was going to make reference to the 126 for whom no efficient generation was listed, but that would not be correct, because quite a number of that 126 for whom the Bureau has listed no efficient generation as a deduction in their estimated load, the applicant himself in making application recognized it and has an application that is lower than his estimated load. So the 126 is not an answer to your question.

Mr. STONG. Is there any justification in the contention that they did not understand, or that there was not a common understanding of the basis of the application?

Mr. AANDAHL. We sent out application forms which were similar. There is one of those forms attached to the statement.

Mr. STONG. This did not indicate whether they should or should not subtract their generation?

Mr. AANDAHL. No, it does not. It leaves the blanks to list their estimated load and to list the amount of power for which they wish to apply. If they applied for less than their estimated load it must have been on the basis that they would use their own generation to that extent. They thought it good business to use their own generation to that extent.

I know that some customers in making that decision decided that we will ask for the full amount of our estimated load and this generation that we put in we will have as a reserve to pick up the difference between the percentage that the Bureau allocates to us and our total load. The Bureau allocation is going to be somewhat less than the total load all through the years. We will use this generation that we have for that purpose, and we will use this generation to carry our load growth after the conclusion of the period that is involved in these estimates.

Other customers did not approach it that way. There is no question but that there were different mental reactions and bases of evaluating what they would like to have done on the part of the customers as they made these applications.

Mr. STONG. Reopening the applications would then require that you set up a standard of efficient generation.

Mr. AANDAHL. Yes. The minute we would open the applications, the applications amounts would be increased in so many instances that we could not use it as a basis. We would just have to get back into the problem. Let me answer it a little differently. I repeat as much as I just said and then go on to state that the applications would then be such that we could not use them as a basis of customer estimates, and that we would have to make the allocation on the basis of the estimated load, applying what we considered the customer's efficient generation as a deduction.

Mr. STONG. Actually, applications are subject to the ambitions and hopes of applicants, are they not?

Mr. AANDAHL. Without any question.

Mr. STONG. They are a less reliable measure of their real need than an analysis.

Mr. AANDAHL. We have put one element of protection in the second analysis against that type of thing by stipulating that the appli-

cation cannot exceed the estimated load. The estimated loads are subject to review by the Bureau.

I fully recognize, Mr. Chairman, that there are problems that are very difficult to solve in any approach that you might take to allocate this amount of power among 250 applicants.

Mr. STONG. There are one or two questions in relation to Montana. I find that their estimated loads were 38,000 kilowatts. You have deducted approximately 10,000 kilowatts chiefly because the load was outside the eastern marketing area. Where will they get power to meet those western area requirements?

Mr. AANDAHL. I will ask Mr. Baker to answer that question.

Mr. BAKER. I beg your pardon, I did not get the question.

Mr. STONG. Where will the Montana customers, who have had a deduction of 10,000 kilowatts because of loads outside the eastern marketing area, get their power to meet the 10,000 deduction for customers in the western area?

Mr. BAKER. The customers in the western area are generally getting their power supply from the combined resource of Canyon Ferry powerplant and the unit at the Fort Peck powerplant which is attached to what we call the west buss. The installed capacity of those two resources of the Bureau aggregate 65,000 kilowatts, which is more than the present requirements of the preference customers in the area as well as their foreseeable growth over the next few years.

Mr. STONG. This 10,000 can be supplied by you from the west side?

Mr. BAKER. It is that portion of an applicant's area which can be served from this western power supply.

Mr. STONG. That is what was excluded. I am raising the question: Do you have power available on the west side to meet this 10,000 now?

Mr. BAKER. I am not sure I understand what 10,000 you are talking about.

Mr. STONG. They applied for 38,000 and you have adjusted that down 10,000 kilowatts for loads outside the eastern marketing area and in the western area?

Mr. BAKER. Yes, that 10,000 adjustment by the Bureau for loads outside the marketing area; of that there is only 7,000 which represents loads outside of the eastern marketing area. The 3,000 deduction represents a prospective load of a Federal establishment. The 7,000 kilowatts of power represents loads in an area which is presently being supplied from our western area resources.

Mr. AANDAHL. Those in the western area are in much better position than those in the eastern area because we have excess power there and can take care of them for quite a long time.

Mr. STONG. You can take care of this load from the western side?

Mr. AANDAHL. Yes. We have a somewhat flexible contract with Montana Power Co. where they are taking what excess power we have there above the needs of the preference customers on a short-term basis and it is available any time that the preference customers need it.

Mr. STONG. Is there a plan ultimately to tie the buss at Fort Peck together again? I hear that the Bureau plans in a few years to do that.

Mr. AANDAHL. I think probably one of the engineers can speak more specifically about that.

Mr. CAMPBELL. Studies are now underway looking toward the installation of the necessary equipment that will enable that tie to be completed. It is not entirely the Federal powerplants that are involved in this. Also involved are the private utilities connected with the Northwest power group. The problem that we get into there is that the main stem of the Missouri Basin plants tied in through the Nebraska system, into a system that extends almost all the way to the east coast, with some 50 million kilowatts of installed capacity, and out of the Pacific Northwest something like 10 million kilowatts, and the types of control in those two systems are different. So it is impossible now to make them operate together. But studies are underway to make modifications to the Northwest system that will allow this to take place.

Mr. STONG. In the interim if a scarcity of power developed on the west side, would it be possible to substitute one of the 35,000 kilowatt generators for the 15,000 kilowatt generators now serving the west side?

Mr. CAMPBELL. It could be connected at Fort Peck, yes, sir.

Mr. STONG. Do you want me to take up these questions, Mr. Chairman?

The CHAIRMAN. Yes. You were submitted a list of questions, Mr. Secretary, and I assume you are prepared to answer those questions.

Mr. BAKER. May I reply to the quick résumé of this question about how many customers having generation apparently considered their generation or the continued use of their generation in making their applications?

Just a quick survey indicates that there were approximately 20 customers whose applications for power were appreciably less than their estimated load, which indicated to us that they did consider on their own initiative the continued use of their generation.

Mr. STONG. That would be 20 out of how many? Is it 260?

Mr. BAKER. I think the figure was given as to how many customers had generation. I think the figure was that there were 126 of these applicants with generation, amounting to 482,669 kilowatts.

Mr. AANDAHL. In that consideration we would also need to include in addition to the 126 the other applicants for whom we have some generation listed on the analysis sheets. I think there would be a little larger number than the one you gave.

Mr. BAKER. That 126, in reading your previous statement, represented the ones that had zero?

Mr. AANDAHL. Yes.

Mr. STONG. I take it you don't regard it as feasible to let these 20 make an adjustment.

Mr. AANDAHL. No, I do not think that we can open up the applications for adjustment. If we do that we will have to go to a different basis of analysis than the one that was submitted on February 20.

Mr. STONG. Now we come to the questions which were submitted. I think we have the same copy.

The first one is the big question about the O'Mahoney-Millikin amendment. Are the operations of the Department of the Interior

in regard to Missouri River management in accord with the O'Mahoney-Millikin amendment as explained by the author, Senator O'Mahoney, at page 81 of the February 13 transcript, where he said:

> Electric power was contemplated by Senator Millikin and myself as a part of the industrial use that could be made by the residents of the upper basin States.

Does the Department consider release of water primarily for navigation in a year when increased firm power is needed in the upper basin States to be consistent with the O'Mahoney-Millikin amendment?

Mr. AANDAHL. Let me respond by saying that those operations that are referred to are primarily operations on the part of the Department of the Army. Our staff people join in conferences with the Army on water releases, but the Army, as the construction agency, has the primary responsibility for the overall plan for the releasing of water, and the relationship of the numerous benefits that are involved in these multipurpose projects—these dams that have been built by the Corps of Engineers—is primarily a responsibility of the Corps. I have not formulated a firm opinion either one way or the other on the relationship of the O'Mahoney-Millikin amendment to water releases for power generation. There is a question there, as I see it, as to just how closely that is related to industrial use in the area. I have generally thought of the industrial uses as the consumptive uses that would be made of the water, but it may also apply to the generation of electrical power. I am not in a position to attempt to answer it. It is a question that I am sure needs a great deal of research, and the Corps of Engineers should be the principle wing of the executive branch that participates in those discussions.

Mr. STONG. If irrigation were involved and there were conflict between navigation and irrigation for water, the Department of the Interior would take steps to protect water for irrigation, would it not?

Mr. AANDAHL. Yes, irrigation would be consumptive use and I would feel that would quite readily fall under the O'Mahoney-Millikin amendment.

Mr. STONG. If you were convinced that Senator O'Mahoney's interpretation that electric power is a part of the industrial use and were convinced that navigation was interfering with that, it would be incumbent on the Department to take the same sort of action in that case as in irrigation, would it not?

Mr. AANDAHL. That is a hypothetical assumption and I would prefer to defer answering until I see it worked out a little more in detail.

The CHAIRMAN. It would not be necessary to repeat the questions as you have a list of these questions before you, Secretary Aandahl.

Mr. AANDAHL. Yes, I have.

The CHAIRMAN. Do you want to follow the list of questions?

Mr. AANDAHL. Yes, I will be glad to do that.

Question No. 2 deals with the average summer flow and winter flow that was used in determining 1,033,000 kilowatts that are available. We do not have the detail of those figures. Our staff people in the field have worked with the Corps of Engineers and the basis on which

the 1,033,000 kilowatts was arrived at comes from the Corps itself. I think that our field people are satisfied that was a satisfactory determination based on the assumptions of the water release requirements and the water supplies that are currently available and the degree to which the reservoirs are filled. We do not have those detailed figures. They are with the Corps of Engineers.

Mr. STONG. At the February 12–13 hearings, one of the witnesses put into the record a report on the operations for the preceding year, which indicated that approximately 30,000 cubic-feet-a-second flowed out of the upper basin during the summer months and that this was cut back to 9,000 in the winter. Do you know if that is approximately correct?

Mr. AANDAHL. Do you have any information on that, Mr. Baker?

Mr. BAKER. I do not have it.

Mr. AANDAHL. That information would be available from the Corps of Engineers who are the operating agents for these projects which they built. As you understand, we pick up the power at the bus bar and we do have some prerogatives in dispatching within limited periods of time to meet an overall water release schedule.

Mr. STONG. The Department itself makes no studies of the requirements for the various uses?

Mr. BAKER. Only to the extent that our people in the field join in conferences with the Corps. The Corps is constantly appraised of the problems that we have and the things that need to be done to meet the requirements of the Department of the Interior.

Mr. STONG. Are there any studies of the possible firming of more winter power and the possible increase in the economic return that might result from firming more of the winter power?

Mr. AANDAHL. I would say that in a general way those questions are constantly under review. We have established the amount of firm power that we will sell based upon the energy that will be available under average water conditions. I think the figure that we have there is slightly under what you call average but it is very close to average water conditions. Our experience nationwide in power marketing has been that that is a desirable approach. Other capabilities of the hydroplant can be used to advantage in the area for purposes other than the generation of firm power—which would be for purposes other than additional firm power—which would have to come as a result of the purchase of energy in excess of what an average water year would do.

Mr. STONG. Are those purposes of greater importance or are they better purposes than meeting the firm power requirements of the REA's?

Mr. AANDAHL. They fit into that purpose to advantage.

Mr. STONG. Do you refer to summer firm and peaking power?

Mr. AANDAHL. Yes, I do.

Mr. STONG. And economy power?

Mr. AANDAHL. Yes.

Mr. STONG. Rather than firm power?

Mr. AANDAHL. I am not sure if I understand your question.

Mr. STONG. Your feeling is that it is advisable to sell this as interruptible power of one type or another rather than firm?

Mr. AANDAHL. In my thinking it is important to properly evaluate the dependable capabilities of the hydroplants, and by being too ambitious in evaluating those capabilities we could very easily get ourselves in a position where under adverse water conditions we would not be able to meet our commitments. There is a growing tendency for hydroplants to be used more and more as peaking plants, and by proper integration of that use the greatest benefit to the area can be accomplished. We find that there is a great variety of relationships that has been used in constructing Federal plants.

For example, the hydroplants in the Southern Power Administration area, which centers around Alberton, Ga., and where Interior sells power from half a dozen or more of Corps of Engineer projects, and a similar arrangement called the Southwestern Power Administration, with headquarters at Tulsa, Okla., from a group of plants that were built by the Corps of Engineers. In those plants there has been so much capacity installed that the water in the rivers gives us a load factor of around 30 percent, or a trifle less, and that means that it is necessary to use those plants as peaking plants to a large extent and to integrate them with steam that exists in the area. Those integration agreements have worked out very well, giving a price advantage to the preference customers for the firm power that they get and an income advantage to the Government in peaking capacity that really has no energy associated with it.

I think that the proper integration and the use of the hydro resource in harmony with the water that is available for the several purposes result to the best advantage of the preference customers and to the area in general.

Mr. STONG. Secretary Aandahl, there was testimony at our previous hearing that there is excess thermal capacity in Nebraska. They have raised the question with the Bureau of integrating that with your hydro to increase availability of firm power in the area but the Bureau has said it is against policy to integrate.

Mr. AANDAHL. No; it is not against policy to integrate. But at the present time we have no summer power that is sufficiently dependable in the Federal plants in the Missouri basin.to match with the winter steam that is available in Nebraska.

Mr. STONG. You have sold some summer firm power, have you not?

Mr. AANDAHL. Yes; we have sold some summer firm power, and that, if available, could be matched with Nebraska winter firm.

Mr. STONG. We have an economic analysis of the Missouri basin project which was submitted the other day. On table 25 there are estimates of available power, as I read it, and I am no expert in power. There is an estimate here in 1963 of an adverse year December capability of 1,008,000 kilowatts in the Army dams, running up to 1,431,000 in 1965. I assume you deduct from that the peaking capabilities to get your firm power. Would that be correct?

Mr. AANDAHL. I will refer that question to the engineers.

Mr. CAMPBELL. I don't recall the basis on which that table is made up, but I think generally your statement is correct.

Mr. STONG. This indicates that you will have a surplus summer peaking capacity of 306,000 kilowatts in the summer of 1963.

Mr. CAMPBELL. That would be after the total development of the installation at Oahe, Garrison, and so on.

Mr. STONG. This is 1963. Could that then be matched with Nebraska?

Mr. AANDAHL. Is that peaking capacity without energy?

Mr. CAMPBELL. Yes.

Mr. AANDAHL. Does that include the secondary power that is sold on a firm basis in the summer?

Mr. CAMPBELL. If that is listed under the column of peaking capacity, there are no kilowatt-hours to go with it.

Mr. STONG. This is summer peak load capability. I have another copy available for you and a copy will be put in the record.

(The table referred to follows:)

TABLE 25.—*Summary of power-sales determination for Bureau of Reclamation and Corps of Engineers powerplants*

Year	Average annual generation (million kilowatt-hours at load)			Adverse year December capability (thousand kilowatts at load)			Estimated firm commercial sales (million kilowatt-hours at load)			Firm load peaking requirements (thousand kilowatts)			Surplus December peaking capability (thousand kilowatts)	
	Corps of Engineers	Bureau of Reclamation	Total	Corps of Engineers	Bureau of Reclamation	Total	Corps of Engineers	Bureau of Reclamation	Total	Corps of Engineers	Bureau of Reclamation	Total	Available (col. 6 minus col. 12)	Salable (80 percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1959	3,896	1,527.0	5,423.0	486	316.4	802.4	2,262	1,246.0	3,508.0	486	260.0	746.0	56.4	45.1
1960	4,158	1,600.3	5,758.3	609	320.9	929.9	2,801	1,305.8	4,106.8	609	272.5	881.5	48.4	38.8
1961	4,470	1,779.1	6,249.1	702	387.7	1,089.7	3,209	1,451.7	4,660.7	702	302.9	1,004.9	84.8	67.8
1962	5,832	1,777.8	7,609.8	789	387.7	1,176.7	3,681	1,450.7	5,131.7	789	302.7	1,091.7	85.0	68.0
1963	7,090	1,776.2	8,866.2	1,008	387.7	1,395.7	4,565	1,449.4	6,014.4	983	302.5	1,285.5	110.2	88.2
1964	7,755	1,772.6	9,527.6	1,228	387.7	1,615.7	5,210	1,446.4	6,656.4	1,126	301.8	1,427.8	187.9	150.3
1965	8,862	2,581.5	11,443.5	1,431	561.7	1,992.7	5,332	2,106.5	7,438.5	1,153	439.6	1,592.6	400.1	320.1
1966	8,800	2,578.3	11,378.3	1,463	561.7	2,024.7	5,368	2,103.9	7,471.9	1,152	439.0	1,591.0	433.7	347.0
1967	8,740	2,574.3	11,314.3	1,495	561.6	2,056.6	5,390	2,100.6	7,490.6	1,151	438.4	1,589.4	467.2	373.8
1968	8,690	2,568.3	11,258.3	1,492	561.2	2,053.2	5,406	2,095.7	7,501.7	1,150	437.3	1,587.3	465.9	372.7
1969	8,640	2,565.2	11,205.2	1,488	561.2	2,049.2	5,414	2,093.2	7,507.2	1,150	436.8	1,586.8	462.4	370.0
1970	8,595	2,559.8	11,154.8	1,485	560.8	2,045.8	5,420	2,088.8	7,508.8	1,149	435.9	1,584.9	460.9	368.7
1971	8,550	2,555.7	11,105.7	1,482	560.5	2,042.5	5,423	2,085.0	7,508.0	1,148	435.2	1,583.2	459.3	367.4
1972	8,500	2,551.5	11,051.5	1,478	560.1	2,038.1	5,426	2,082.0	7,508.0	1,147	434.5	1,581.5	456.6	365.3
1973	8,460	2,548.2	11,008.2	1,474	559.8	2,033.8	5,425	2,079.3	7,504.3	1,146	433.9	1,579.9	453.9	363.1
1974	8,425	2,544.8	10,969.8	1,471	559.6	2,030.6	5,424	2,076.6	7,500.6	1,143	433.3	1,576.3	454.3	363.4
1975	8,381	2,541.2	10,922.2	1,466	559.6	2,025.6	5,422	2,073.6	7,495.6	1,140	432.7	1,572.7	452.9	362.3
1976	8,350	2,539.0	10,889.0	1,462	559.6	2,021.6	5,421	2,071.8	7,492.8	1,137	432.3	1,569.3	452.3	361.8
1977	8,315	2,533.2	10,848.2	1,457	559.4	2,016.4	5,420	2,067.1	7,487.1	1,134	431.4	1,565.4	451.0	360.8
1978	8,280	2,528.3	10,808.3	1,451	559.1	2,010.1	5,419	2,063.1	7,482.1	1,131	430.5	1,561.5	448.6	358.9
1979	8,240	2,522.5	10,762.5	1,446	558.8	2,004.8	5,418	2,058.4	7,476.4	1,128	429.5	1,557.5	447.3	357.8
1980	8,210	2,516.6	10,726.6	1,440	558.5	1,998.5	5,417	2,053.5	7,470.5	1,125	428.5	1,553.5	445.0	356.0
1981	8,180	2,507.2	10,687.2	1,432	558.1	1,990.1	5,416	2,045.9	7,461.9	1,121	426.9	1,547.9	442.2	353.8
1982	8,140	2,499.0	10,639.0	1,424	557.8	1,981.8	5,414	2,039.2	7,453.2	1,118	425.5	1,543.5	438.3	350.6
1983	8,110	2,951.2	11,061.2	1,414	666.8	2,080.8	5,413	2,408.2	7,821.2	1,115	502.5	1,617.5	463.3	370.6
1984	8,070	2,945.1	11,015.1	1,403	666.8	2,069.8	5,412	2,403.2	7,815.2	1,112	501.5	1,613.5	456.3	365.0
1985	8,042	3,040.5	11,082.5	1,390	679.7	2,069.7	5,411	2,481.0	7,892.0	1,109	517.7	1,626.7	443.0	354.4
1986	8,000	3,037.7	11,037.7	1,383	679.7	2,062.7	5,400	2,478.8	7,878.8	1,107	517.3	1,624.3	438.4	350.7
1987	7,970	3,033.9	11,003.9	1,377	679.7	2,056.7	5,388	2,475.7	7,863.7	1,104	516.6	1,620.6	436.1	348.9
1988	7,930	3,030.0	10,960.0	1,372	679.7	2,051.7	5,378	2,472.5	7,850.5	1,102	516.0	1,618.0	433.7	347.0
1989	7,890	3,117.2	11,007.2	1,369	692.3	2,061.3	5,364	2,543.6	7,907.6	1,099	530.8	1,629.8	431.5	345.2
1990	7,860	3,113.6	10,973.6	1,365	692.3	2,057.3	5,352	2,540.7	7,892.7	1,097	530.2	1,627.2	430.1	344.1
1991	7,820	3,112.6	10,932.6	1,362	692.3	2,054.3	5,340	2,539.9	7,879.9	1,094	530.0	1,624.0	430.3	344.2
1992	7,790	3,111.6	10,901.6	1,359	692.3	2,051.3	5,328	2,539.1	7,867.1	1,092	529.9	1,621.9	429.4	343.5

1993	7,750	3,252.7	11,002.7	1,356	712.3	2,068.3	5,316	2,654.2	7,970.2	1,089	553.9	1,642.9	425.4	340.3
1994	7,710	3,252.0	10,962.0	1,354	712.3	2,066.3	5,304	2,653.6	7,957.6	1,087	553.8	1,640.8	425.5	340.4
1995	7,680	3,250.8	10,930.8	1,351	712.3	2,063.3	5,290	2,652.7	7,942.7	1,084	553.6	1,637.6	425.7	340.6
1996	7,640	3,249.3	10,889.3	1,349	712.3	2,061.3	5,278	2,651.4	7,929.4	1,081	553.3	1,634.3	427.0	341.6
1997	7,605	3,471.7	11,076.7	1,347	749.7	2,096.7	5,266	2,832.9	8,098.9	1,079	591.2	1,670.2	426.5	341.2
1998	7,570	3,470.2	11,040.2	1,345	749.7	2,094.7	5,254	2,831.7	8,085.7	1,076	590.9	1,666.9	427.8	342.2
1999	7,530	3,468.7	10,998.7	1,343	749.7	2,092.7	5,242	2,830.5	8,072.5	1,074	590.7	1,664.7	428.0	342.4
2000	7,495	3,467.5	10,962.5	1,340	749.7	2,089.7	5,230	2,829.5	8,059.5	1,071	590.5	1,661.5	428.2	342.6
2001	7,460	3,753.2	11,213.2	1,338	793.2	2,131.2	5,218	3,062.6	8,280.6	1,069	639.1	1,708.1	423.1	338.5
2002	7,410	3,750.0	11,160.0	1,337	793.2	2,130.2	5,206	3,060.0	8,266.0	1,066	638.6	1,704.6	425.6	340.5
2003	7,380	3,747.8	11,127.8	1,335	793.2	2,128.2	5,194	3,058.2	8,252.2	1,064	638.2	1,702.2	426.0	340.8
2004	7,340	3,745.7	11,085.7	1,333	793.2	2,126.2	5,182	3,056.5	8,238.5	1,061	637.8	1,698.8	427.4	341.9
2005	7,310	3,743.2	11,053.2	1,331	793.2	2,124.2	5,170	3,054.5	8,224.5	1,059	637.4	1,696.4	427.8	342.2
2006	7,270	3,740.4	11,010.4	1,329	793.2	2,122.2	5,158	3,052.2	8,210.2	1,056	636.9	1,692.9	429.3	343.4
2007	7,230	3,738.1	10,968.1	1,328	793.2	2,121.2	5,146	3,050.3	8,196.3	1,054	636.5	1,690.5	430.7	344.6
2008	7,200	3,735.8	10,935.8	1,326	793.2	2,119.2	5,134	3,048.4	8,182.4	1,051	636.1	1,687.1	432.1	345.7
2009	7,160	3,733.6	10,893.6	1,325	793.2	2,118.2	5,122	3,046.6	8,168.6	1,049	635.8	1,684.8	433.4	346.7
2010	7,120	3,731.6	10,851.6	1,323	793.2	2,116.2	5,110	3,045.0	8,155.0	1,046	635.4	1,681.4	434.8	347.8
2011	7,080	3,728.6	10,808.6	1,321	793.2	2,114.2	5,098	3,042.5	8,140.5	1,044	634.9	1,678.9	435.3	348.2
2012	7,040	3,725.6	10,765.6	1,320	793.2	2,113.2	5,086	3,040.1	8,126.1	1,041	634.4	1,675.4	437.8	350.2
2013	7,005	3,722.5	10,727.5	1,318	793.2	2,111.2	5,074	3,037.6	8,111.6	1,039	633.9	1,672.9	438.3	350.6
2014	6,970	3,719.4	10,689.4	1,317	793.2	2,110.2	5,062	3,035.0	8,097.0	1,036	633.3	1,669.3	440.9	352.7
2015	6,930	3,716.3	10,646.3	1,315	793.2	2,108.2	5,050	3,032.5	8,082.5	1,034	632.8	1,666.8	441.4	353.1
2016	6,890	3,713.0	10,603.0	1,314	793.2	2,107.2	5,036	3,029.8	8,065.8	1,031	632.2	1,663.2	444.0	355.2
2017	6,850	3,709.7	10,559.7	1,313	793.2	2,106.2	5,024	3,027.1	8,051.1	1,028	631.7	1,659.7	446.5	357.2
2018	6,810	3,706.3	10,516.3	1,312	793.2	2,105.2	5,012	3,024.3	8,036.3	1,026	631.1	1,657.1	448.1	358.5
2019	6,770	3,703.2	10,473.2	1,310	793.2	2,103.2	5,000	3,021.8	8,021.8	1,023	630.6	1,653.6	449.6	359.7
2020	6,730	3,699.8	10,429.8	1,309	793.2	2,102.2	4,988	3,019.0	8,007.0	1,021	630.0	1,651.0	451.2	361.0
2021	6,690	3,699.8	10,389.8	1,308	793.2	2,101.2	4,976	3,019.0	7,995.0	1,018	630.0	1,648.0	453.2	362.6
2022	6,660	3,699.8	10,359.8	1,307	793.2	2,100.2	4,964	3,019.0	7,983.0	1,016	630.0	1,646.0	454.2	363.4
2023	6,620	3,699.8	10,319.8	1,305	793.2	2,098.2	4,950	3,019.0	7,969.0	1,013	630.0	1,643.0	455.2	364.2
2024	6,580	3,699.8	10,279.8	1,304	793.2	2,097.2	4,938	3,019.0	7,957.0	1,011	630.0	1,641.0	456.2	365.0
2025	6,539	3,699.8	10,238.8	1,303	793.2	2,096.2	4,927	3,019.0	7,946.0	1,008	630.0	1,638.0	458.2	366.6
Total	501,065	206,486.7	707,551.7	88,719	44,766.8	133,485.8	341,894	168,492.4	510,386.4	70,854	35,160.7	106,014.7	27,471.1	21,976.9

TABLE 25.—*Summary of power-sales determination for Bureau of Reclamation and Corps of Engineers powerplants*—Continued

Year	August adverse peaking capability (thousand kilowatts at load)			Peak summer load requirements (thousand kilowatts)			Surplus summer peaking (thousand kilowatts) (col. 17 minus col. 20)	Salable capacity and energy			Salable generation (million kilowatt-hours)			Total
	Corps of Engineers	Bureau of Reclamation	Total	Firm commercial summer peak (December 88 percent)	Irrigation pumps	Subtotal		Less winter surplus peaking [1] (thousand kilowatts)	Net available summer firm (thousand kilowatts)	Summer firm energy [2] (million kilowatt-hours)	Firm commercial	Irrigation pumping	Nonfirm	
	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
1959	556	359.7	915.7	656.5	16.4	672.9	242.8	45.1	197.7	557.9	4,065.9	24.6	1,332.5	5,423.0
1960	712	369.9	1,081.9	775.7	16.5	792.2	289.7	38.8	250.9	565.0	4,671.8	25.0	1,061.5	5,758.3
1961	807	408.4	1,215.4	884.3	17.3	901.6	313.8	67.8	246.0	565.0	5,225.7	25.2	998.2	6,249.1
1962	838	408.4	1,246.4	960.7	17.4	978.1	268.3	68.0	200.3	565.2	5,696.9	25.9	1,887.0	7,609.8
1963	1,047	408.4	1,455.4	1,131.2	17.6	1,148.8	306.6	88.2	218.4	616.3	6,630.7	26.6	2,208.9	8,866.2
1964	1,286	408.4	1,694.4	1,256.5	17.6	1,274.1	420.3	150.3	270.0	761.9	7,418.3	27.0	2,082.3	9,527.6
1965	1,542	582.4	2,124.4	1,401.5	18.3	1,419.8	704.6	320.1	384.5	999.0	8,437.5	27.3	2,978.7	11,443.5
1966	1,552	582.3	2,134.3	1,400.0	18.3	1,418.3	716.0	347.0	369.0	999.0	8,470.9	28.0	2,879.4	11,378.3
1967	1,563	582.2	2,145.2	1,398.7	18.6	1,417.3	727.9	373.8	354.1	999.3	8,489.9	28.0	2,796.4	11,314.3
1968	1,563	581.6	2,144.6	1,396.8	32.3	1,429.1	715.5	372.7	342.8	967.4	8,469.1	28.3	2,760.9	11,258.3
1969	1,563	581.6	2,144.6	1,396.4	36.4	1,432.8	711.8	370.0	341.8	964.6	8,471.8	49.2	2,684.2	11,205.2
1970	1,562	581.1	2,143.1	1,394.7	39.7	1,434.4	708.7	368.7	340.0	959.5	8,468.3	58.4	2,628.1	11,154.8
1971	1,562	580.6	2,142.6	1,393.2	45.0	1,438.2	704.4	367.4	337.0	951.0	8,459.0	68.3	2,578.4	11,105.7
1972	1,561	580.0	2,141.0	1,391.7	46.6	1,438.3	702.7	365.3	337.4	951.0	8,459.0	75.6	2,516.9	11,051.5
1973	1,559	579.6	2,138.6	1,390.3	55.2	1,445.5	693.1	363.1	330.0	931.3	8,435.6	76.4	2,496.2	11,008.2
1974	1,558	579.3	2,137.3	1,387.1	75.5	1,462.6	674.7	363.4	311.3	878.5	8,379.1	69.4	2,521.3	10,969.8
1975	1,556	579.3	2,135.3	1,384.0	78.8	1,462.8	672.5	362.3	310.2	875.4	8,371.0	100.7	2,450.5	10,922.2
1976	1,554	579.3	2,133.3	1,381.0	92.1	1,473.1	660.2	361.8	298.4	842.1	8,334.9	107.9	2,446.2	10,889.0
1977	1,551	579.1	2,130.1	1,377.6	96.0	1,473.6	656.5	360.8	295.7	834.5	8,321.6	126.2	2,400.4	10,848.2
1978	1,548	578.7	2,126.7	1,373.2	100.0	1,473.2	653.5	358.9	294.6	831.4	8,313.5	148.6	2,346.2	10,808.3
1979	1,545	578.0	2,123.0	1,370.6	127.6	1,498.2	624.8	357.8	267.0	753.5	8,229.9	169.2	2,363.4	10,762.5
1980	1,540	577.6	2,117.6	1,367.1	130.2	1,497.3	620.3	356.0	264.3	745.9	8,216.4	189.3	2,320.9	10,726.6
1981	1,535	577.1	2,112.1	1,362.2	134.0	1,496.2	615.9	353.8	262.1	739.6	8,201.5	207.9	2,277.8	10,687.2
1982	1,528	576.6	2,104.6	1,358.3	134.3	1,492.6	612.0	350.6	261.4	737.7	8,190.9	226.6	2,221.5	10,639.0
1983	1,519	685.6	2,204.6	1,423.4	139.5	1,562.9	641.7	370.6	271.1	737.0	8,558.2	229.5	2,273.5	11,061.2
1984	1,505	685.6	2,190.6	1,419.9	153.8	1,573.7	616.9	365.0	251.9	710.9	8,526.1	253.5	2,235.5	11,015.1
1985	1,491	698.5	2,189.5	1,431.5	155.6	1,587.1	602.4	354.4	248.0	699.9	8,591.9	264.6	2,226.0	11,082.5
1986	1,481	698.5	2,179.5	1,429.4	157.3	1,586.7	592.8	350.7	242.1	683.2	8,562.0	275.5	2,200.2	11,037.7
1987	1,474	698.5	2,172.5	1,426.1	160.3	1,586.4	586.1	348.9	237.2	669.4	8,533.1	285.1	2,185.7	11,003.9
1988	1,468	698.5	2,166.5	1,423.8	164.1	1,587.9	578.6	347.0	231.6	653.6	8,504.1	295.0	2,160.9	10,960.0
1989	1,463	711.1	2,174.1	1,434.2	167.2	1,601.4	572.7	345.2	227.5	642.0	8,549.6	303.7	2,153.9	11,007.2

1990	1,458	711.1	2,169.1	1,431.9	170.2	1,602.1	567.0	344.1	222.9	629.0	8,521.7	311.9	2,140.0	10,973.6
1991	1,455	711.1	2,166.1	1,429.1	186.3	1,615.4	550.7	344.2	206.5	582.7	8,462.6	317.2	2,152.8	10,932.6
1992	1,451	711.1	2,162.1	1,427.3	188.0	1,615.3	546.8	343.5	203.3	573.7	8,440.8	323.2	2,137.6	10,901.6
1993	1,448	731.1	2,179.1	1,445.8	198.1	1,643.9	535.2	340.3	194.9	550.0	8,520.2	327.2	2,155.3	11,002.7
1994	1,446	731.1	2,177.1	1,443.9	200.9	1,644.8	532.3	340.4	191.9	541.5	8,499.1	334.6	2,128.3	10,962.0
1995	1,444	731.1	2,175.1	1,441.1	204.3	1,645.4	529.7	340.6	189.1	533.6	8,476.3	346.4	2,108.1	10,930.8
1996	1,441	731.1	2,172.1	1,438.2	207.7	1,645.9	526.2	341.6	184.6	520.9	8,450.3	362.0	2,077.0	10,889.3
1997	1,440	768.5	2,208.5	1,469.8	216.8	1,686.6	521.9	341.2	180.7	509.9	8,608.8	377.2	2,090.7	11,076.7
1998	1,438	768.5	2,206.5	1,466.9	252.4	1,719.3	487.2	342.2	145.0	409.2	8,494.9	395.2	2,150.1	11,040.2
1999	1,436	768.5	2,204.5	1,464.9	262.6	1,727.5	477.0	342.4	134.6	379.8	8,452.3	416.8	2,129.6	10,998.7
2000	1,435	768.5	2,203.5	1,462.1	268.9	1,731.0	472.5	342.6	129.9	366.6	8,426.1	444.4	2,092.0	10,962.5
2001	1,433	812.0	2,245.0	1,503.1	273.5	1,776.6	468.4	338.5	129.9	366.6	8,647.2	461.3	2,104.7	11,213.2
2002	1,432	812.0	2,244.0	1,500.0	300.2	1,800.2	443.8	340.5	103.3	291.5	8,557.5	481.0	2,121.5	11,160.0
2003	1,431	812.0	2,243.0	1,497.9	310.5	1,808.4	434.6	340.8	93.8	264.7	8,516.9	502.7	2,108.2	11,127.8
2004	1,429	812.0	2,241.0	1,494.9	325.2	1,820.1	420.9	341.9	79.0	222.9	8,461.4	524.4	2,099.9	11,085.7
2005	1,428	812.0	2,240.0	1,492.8	350.5	1,843.3	396.7	342.2	54.5	153.8	8,378.3	548.4	2,126.5	11,053.2
2006	1,427	812.0	2,239.0	1,489.8	363.6	1,853.4	385.6	343.4	42.2	119.1	8,329.3	574.7	2,106.4	11,010.4
2007	1,426	812.0	2,238.0	1,487.6	391.7	1,879.3	358.7	344.6	14.1	39.8	8,236.1	600.7	2,131.3	10,968.1
2008	1,425	812.0	2,237.0	1,484.6	397.0	1,881.6	355.4	345.7	9.7	27.4	8,209.8	627.7	2,098.3	10,935.8
2009	1,424	812.0	2,236.0	1,482.6	402.8	1,885.4	350.6	346.7	3.9	11.0	8,179.6	649.8	2,064.2	10,893.6
2010	1,423	812.0	2,235.0	1,479.6	414.4	1,894.0	341.0	341.0	0	0	8,155.0	665.1	2,031.5	10,851.6
2011	1,422	812.0	2,234.0	1,477.4	419.2	1,896.6	337.4	337.4	0	0	8,140.5	679.4	1,988.7	10,808.6
2012	1,421	812.0	2,233.0	1,474.4	434.7	1,909.1	323.9	323.9	0	0	8,126.1	694.1	1,945.4	10,765.6
2013	1,421	812.0	2,233.0	1,472.2	438.7	1,910.9	322.1	322.1	0	0	8,111.6	711.5	1,904.4	10,727.5
2014	1,420	812.0	2,232.0	1,469.0	444.6	1,913.6	318.4	318.4	0	0	8,097.0	730.3	1,862.1	10,689.4
2015	1,419	812.0	2,231.0	1,466.8	458.0	1,924.8	306.2	306.2	0	0	8,082.5	750.6	1,813.2	10,646.3
2016	1,418	812.0	2,230.0	1,463.6	461.6	1,925.2	304.8	304.8	0	0	8,065.8	769.4	1,767.8	10,603.0
2017	1,417	812.0	2,229.0	1,460.5	463.3	1,923.8	305.2	305.2	0	0	8,051.1	788.1	1,720.5	10,559.7
2018	1,417	812.0	2,229.0	1,458.2	476.5	1,934.7	294.3	294.3	0	0	8,036.3	808.6	1,671.4	10,516.3
2019	1,416	812.0	2,228.0	1,455.2	478.0	1,933.2	294.8	294.8	0	0	8,021.8	826.8	1,624.6	10,473.2
2020	1,415	812.0	2,227.0	1,452.9	478.2	1,931.1	295.9	295.9	0	0	8,007.0	840.9	1,581.9	10,429.8
2021	1,415	812.0	2,227.0	1,450.2	478.3	1,928.5	298.5	298.5	0	0	7,995.0	848.0	1,546.8	10,389.8
2022	1,414	812.0	2,226.0	1,448.5	478.5	1,927.0	299.0	299.0	0	0	7,983.0	848.5	1,528.3	10,359.8
2023	1,413	812.0	2,225.0	1,445.8	478.6	1,924.4	300.6	300.6	0	0	7,969.0	848.9	1,501.9	10,319.8
2024	1,413	812.0	2,225.0	1,444.1	478.6	1,922.7	302.3	302.3	0	0	7,957.0	849.3	1,473.5	10,279.8
2025	1,412	812.0	2,224.0	1,441.4	478.7	1,920.1	303.9	303.9	0	0	7,946.0	849.5	1,443.3	10,238.8
Total	95,012	46,107.6	141,119.6	93,291.7	15,310.6	180,602.3	32,517.3	21,209.2	11,308.1	31,481.7	541,868.1	25,282.3	140,401.3	707,551.7

[1] Col. 22 is the adjusted estimate of surplus peaking sales without energy.
[2] Salable summer firm based on "contract" load patterns indicating 2,822 hours use of summer-peak kilowatts.

Mr. AANDAHL. If I understand that is peaking capacity without dependable energy, then its integration with Nebraska winter power under the condition of their loads where they would have no energy for us in the summertime would not be practical. I am a little bit hesitant to attempt to answer questions of that kind until the engineers have fully analyzed the facts and I know exactly what I am talking about.

Mr. STONG. It is your decision that is capability?

Mr. BAKER. It appears to be.

Mr. STONG. I note in that same table it indicates that you will have 2,208 million kilowatt-hours, or approximately 33 percent as many kilowatt-hours of nonfirm power to sell as firm power in that year.

Mr. CAMPBELL. That is right. Salable generation in the next to the last column is estimated to be 2,208 megawatt hours.

Mr. STONG. This would indicate that total kilowatt hours of nonfirm power is about one-third of the firm power that would be marketed.

Mr. CAMPBELL. That is correct, sir.

Mr. STONG. Based on a million kilowatts of firm power that year it would indicate that you might be able to firm up another 200,000 or 300,000 kilowatts.

Mr. CAMPBELL. It might, but I would like to check that.

Mr. STONG. I see Mr. DeBoer is here. At the other hearing he was asked to indicate the excess capacity of the Nebraska system stem capacity which might be used for firming. I wonder if you have those figures, Mr. DeBoer.

Mr. DEBOER. Yes; I have.

STATEMENT OF DEWEY DeBOER OF NEBRASKA PUBLIC POWER SYSTEM

Mr. STONG. This is Mr. Dewey DeBoer of the Nebraska Public Power System. I wonder if he might tell us now what the surplus capacity situation is in Nebraska.

Mr. DEBOER. Mr. Chairman, I have a few copies here of an analysis we completed recently. I would like to review it very briefly. The first page is an analysis by States of Mr. Aandahl's study of February 2, 1959, after deducting Federal loads. You will note in this we deducted in Montana 14,000 kilowatts, in South Dakota, 8,922, and in Nebraska, 19,200. That is because the Federal loads are being considered on a 100 percent basis. From that figure we determined that the Bureau would have to sell to preference customers other than Federal loads 944,400 kilowatts, which is the right-hand column.

Mr. STONG. Will you file a copy of the analysis for the record at this point, Mr. DeBoer?

The CHAIRMAN. It may be included.

(The document referred to follows:)

NEBRASKA PUBLIC POWER SYSTEM—OMAHA PUBLIC POWER DISTRICT

Analysis of Feb. 20, 1959, revised study exclusive of Federal loads as related to thermal capacity available for "firming" USBR power

[All figures in kilowatts]

State	Applications 1963 (3)	1963–64 winter loads (4)	Adjusted loads (6)	Base figure (7)	83 percent of column (7) (8)
Montana (0 [1])	36,320	38,420	28,053	28,053	23,320
North Dakota (14,000 [1])	181,875	206,180	178,390	175,460	147,535
South Dakota (8,922 [1]) (3,500 [2])	227,313	227,913	224,954	224,254	[2] 187,985
Minnesota (0 [1])	301,322	416,372	312,822	295,742	245,820
Iowa (0 [1])	159,537	290,073	162,729	158,917	132,040
Nebraska (19,200 [1])	247,819	901,515	900,815	246,174	207,700
Totals (42,122 [1]) (3,500 [2])	1,154,186	2,080,573	1,807,763	1,128,600	944,400
Amount needed to meet 100 percent of base figure, column (7)					184,200
Total of customer applications for 1963 (adjusted)					1,128,600

[1] Federal loads deducted.
[2] Additional Federal load deducted col. (8) only.

	Kilowatts
Capability (winter 1963–64):	
OPPD, generation	641,000
USBR (Feb. 20, 1959)	24,900
Subtotal	665,900
NPPS, generation	453,000
USBR (1954 allotment)	100,000
USBR (Feb. 20, 1959)	24,500
Subtotal	577,500
Total capability	1,243,400
Load (winter 1963–64):	
OPPD	380,000
NPPS	412,000
Total load requirement	792,000
Reserve requirement (792,000 by 12 percent)	95,000
Power available for firming either by direct sale or by displacement or both:	
Total capability	1,243,400
Less reserve requirement	95,000
Total firm capacity	1,148,400
Load requirement	792,000
Total available	356,400
Amount required (to meet 1963 applications)	184,200
Surplus	172,200

Additional amounts available to each State if deficit is made up by purchase of thermal power in the basin (exclusive of Federal loads)

State	Base figure (7)	83 percent of column (7) (8)	Difference, column (7),(8 (9)
Montana	28,053	23,320	4,733
North Dakota	175,460	147,535	27,925
South Dakota	224,254	187,985	36,269
Minnesota	295,742	245,820	49,922
Iowa	158,917	132,040	26,877
Nebraska	246,174	207,700	38,474
Total	1,128,600	944,400	184,200

NEBRASKA

	Feb. 20, 1959, study	Add	Total
NPPS (including class I)	124,500	25,500	150,000
Class II	58,300	7,874	66,174
OPPD	24,900	5,100	30,000
Total	207,700	38,474	246,174

If USBR power is "firmed" by purchase of 184,200 kilowatts to meet 1,963 applications then Nebraska will have the following additional surplus in winter of 1963–64.

	Kilowatts
OPPD (by firming)	5,100
NPPS (by firming)	25,500
Total additional surplus	30,600
Previous surplus	172,200
Total surplus	202,800

Mr. DEBOER. The basic requirements of the customers according to their applications is column 7, which is 1,128,600 kilowatts, after adjustments as the Bureau made them. That would indicate, then, that in order for the total requirements of the applicants for 1963 to be met the Bureau should have an additional 184,200 kilowatts of power.

Turning to page 2 we show there the capability in Nebraska. Omaha Public Power District has a generation capability of 641,000 kilowatts. On the basis of the study of February 2, 1959, OPPD would get 24,900 kilowatts from the Bureau or they would have a total capability of 665,900 kilowatts of firm power. Nebraska Public Power System likewise has a generation capability of 453,000 kilowatts and their 1954 allotment from the Bureau was 100,000 kilowatts and they would get under the proposed February 20, 1959, study an additional 24,500. They would have a total of 577,500 kilowatts.

The total capability of both utilities would be 1,243,400 kilowatts of firm power.

The loads in the 1963–64 winter would be 380,000 kilowatts and for the Nebraska Public Power System 412,000 kilowatts. The total requirement is 792,000 kilowatts. We, by agreement, maintain 12 percent reserve on that load which is 95,000 kilowatts.

Then, recapping, the power that is available for firming, either by direct sale or by displacement or both, would be as follows:

The total capability 1,243,400 kilowatts. Deducting the reserve requirement of 95,000 kilowatts leaves a firm capacity of 1,148,400 kilowatts. The load requirement is 792,000 kilowatts, thus the total that would be available for this purpose of firming would be 356,400 kilowatts. The amount required to meet the 1963 applications is 184,200 kilowatts. So we would still have a surplus of 172,200 kilowatts which could be used for further firming in subsequent years.

Mr. STONG. You mean that could be used for firming beyond 1963?

Mr. DEBOER. That is right. That would depend upon the rate of our own load growth and the rate at which that would be depleted by our own load growth.

On page 3 is a breakdown of the amount that we would estimate that the various States would get additional out of this 184,200. That is in the last column there and I won't bother to read that except to say that as far as Nebraska is concerned it would get 38,474 kilowatts additional. That would be divided in Nebraska by adding 25,500 to the February 20, 1959 study, so that Nebraska Public Power System would get the 150,000 which they applied for and the class 2 customers in Nebraska would get the 66,174 they applied for and the Omaha district would get the 30,000 kilowatts it applied for, or the total to Nebraska would be 246,174 kilowatts which is what Nebraska applied for in 1963.

Adding those additional amounts to the OPPD and the NPPS capability it would give us an additional surplus of 30,600 kilowatts or a total of 202,800 kilowatts which would be available at least to some extent for meeting new firming requirements in the years subsequent to 1963. Does that answer your question?

Mr. STONG. That answers my question. To make sure I have a correct understanding of it, you have winter capacity adequate to meet the deficit of firm power of the preference customers in 1963, with a surplus of 172,000 kilowatts which could be used to pick up your own load growth and their load growth beyond 1963.

Mr. DEBOER. On the basis of the analysis that the Department has made as of February 20, 1959.

Mr. AANDAHL. Mr. Chairman, I would like to add a comment there. There has never been any question in our mind about the availability of surplus capacity from Nebraska during the winter months as outlined here. I don't know that we had specific figures such as they have submitted but there has never been any question about that. The big question that is involved is the question of finding firm power for the remaining months to associate with this proposed winter power from Nebraska. There is peaking capacity without dependable energy in the Missouri River Federal System. The question is how far should we stick our neck out in an attempt to supply the energy that is necessary with that peaking capacity in the summer months. We have felt when we firm up to the capabilities of an average water-year that we have gone as far as we should go in that type of venture. If there is any other customer that wants to buy this winter power from Nebraska, they may do so, and we will sell them peaking capacity without energy. If they can scout around and find the energy to go with it on a basis on which they have confidence, that is just fine. The

whole question that is posed here is how far should the Federal Government go in scouting around for energy to firm up this summer capacity. To the extent that we have it on a dependable basis we have sold secondary energy in the amount of 150,000 kilowatts for summer purposes. Beyond that we are skating on thinner ice.

Mr. STONG. Do you have any comment to make, Mr. DeBoer?

Mr. DEBOER. I believe, Mr. Secretary, that the thing we are proposing here is a direct purchase of energy during the 6 winter months, if you please, which would result in actually putting more energy behind your dams and more water behind your dams. I think you were talking about a trade of energy.

Mr. STONG. Thank you.

Mr. DEBOER. Thank you, sir.

STATEMENT OF HON. FRED G. AANDAHL, ASSISTANT SECRETARY OF THE INTERIOR—Resumed

Mr. STONG. Are there not estimates available of what actual energy you will have in the summer months when 30,000 cubic feet a second are going downstream for navigation as compared to the winter capacity when 9,000 second feet are used for navigation?

Mr. AANDAHL. I will again ask the engineers for what information we have on that.

Mr. CAMPBELL. I think possibly this table shows you the answer—this table 25—if you look at columns 22, 23, and 24. Referring specifically to column 23, in 1963 there is shown a net available summer firm kilowatt figure of 218,000 kilowatts. Along with that is energy to the extent of 616,000 megawatt hours. Actually the kilowatt figure is arrived at by assuming an hour-use as shown in the footnote down there, the salable summer firm based on contract load patterns indicating 2,822 hours of use of summer peak kilowatts. So actually you back into the kilowatt figure by applying a certain estimated hours of use to see what type of load you can serve.

Mr. STONG. Have studies been made of your ability with this kind of power available to firm up summer power which might be matched with winter thermal?

Mr. CAMPBELL. Not definitely completed studies, no, sir.

(The Bureau subsequently submitted the following information in regard to available seasonal firm power:)

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D.C., April 24, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR SENATOR MURRAY: As requested in your April 16 letter, we are enclosing data on the estimated availability of seasonal power and energy in the eastern area of the eastern division of the Missouri River Basin project.

We are pleased to furnish you this information.

Sincerely yours,

(S) ALFRED R. GOLZE,
Acting Commissioner.

Missouri River Basin project, eastern area, eastern division, capability, adverse water year, available for seasonal use, April through September, on a firm basis [1]

[Thousands of kilowatts]

	Available	Existing commitments [2]	Reserved for annual peaking service	Balance available
1959	113	107.5		5.5
1960	166	133.5		32.5
1961	169	163.5		5.5
1962	125	159.5		−34.5
1963	135	159.5		−24.5
1964	341	159.5	158	23.5

[1] Based upon October 1958 data on projected river operations excluding Big Bend powerplant.
[2] Includes for 1959, 1960, and 1961, approximately 24 megawatts in negotiation status.

MISSOURI RIVER BASIN PROJECT, EASTERN AREA, EASTERN DIVISION, NONFIRM ENERGY AVAILABILITY

Additional supplies of energy classified as nonfirm energy will be available during the navigation season of average water years in varying quantities depending on annual water conditions. Since this energy generation cannot be firmly established in advance from year to year, it is sold as fuel replacement energy on an if, as, and when basis.

Mr. STONG. This table is an adverse water-year, December, capability. This again is capability rather than ability to deliver energy.

Mr. CAMPBELL. Adverse water-year indicates that the kilowatts are determined on that basis because that is the lowest head that we would have to use on the reservoirs. The average water-year is considered when we talk about energy.

Mr. STONG. Are there tables available on average water-year? I find nothing in this report on average water-year.

Mr. CAMPBELL. I believe some of the studies of the Corps of Engineers are based on such operations.

Mr. BAKER. The Corps of Engineers and the Bureau of Reclamation do confer and work together in some of these determinations. Essentially the Corps of Engineers furnishes to the Bureau periodically statements of capacity capabilities that are based upon adverse-year water forecasts, and what they term also a lower quartile and an upper quartile. In other words, they give four sets of figures as they foresee the possibilities for maybe 2 or 3 years. But on the long-range study of assured capability on the system we basically use the adverse year because that is the only one on which we can always be assured of capacity. Otherwise, we would find ourselves in the position, if we were only using a short-range 2-year or 3-year set of figures, that if we attempted to sell capacity on a median year basis we would be in excellent position as long as the water was median.

As soon as we had an adverse year we would be overcommitted contractually on power deliveries and could not meet our commitments.

Mr. STONG. You are saying, then, that the firm you can commit is based on an adverse year?

Mr. BAKER. The firm capacity which can be supported by energy based upon average year energy is the maximum on which we feel

justified in making long-range commitments. That is, contracts of 10, 20 years or more.

Mr. STONG. What is the relationship between adverse and average water year energy?

Mr. BAKER. I don't think we have anything that could be given in figures here because we do not necessarily concern ourselves with adverse year energy, because it is our purpose and expectation to go out and interchange energy, trade energy or even buy thermal energy when the water is less than average water years.

In other words, we base our whole marketing plan upon the theory of average year energy because statistically the possibilities of adverse year energy only occur maybe 1 out of 10 years.

Mr. STONG. Is it fair to assume that average year energy availability will be 10, 15, 20 percent above the adverse year availability shown in this table?

Mr. BAKER. I would hesitate to give any specific relationship because I do not have such a relationship in mind.

Mr. STONG. But in an average year there would be more nonfirm power to sell than indicated in this study of an adverse year.

Mr. BAKER. I don't know that that can be taken as a fair conclusion. That would depend upon how much energy we had to deliver in connection with firm power contract commitments.

Mr. STONG. Assuming your firm power commitments are full?

Mr. BAKER. If your firm power commitments are based upon the amount of capacity that we can deliver with energy based upon average year, we are absorbing the maximum amount of average year energy in meeting firm power commitments.

Mr. STONG. In an average water year you would have considerably more than the 8,866,000 kilowatt-hours total energy production.

Mr. BAKER. I believe these energy capabilities in the analysis to which you are referring on page 25, the energy statistics incorporated in this table are based upon average year energy.

Mr. STONG. These are average year energy statistics?

Mr. BAKER. Yes.

Mr. STONG. But adverse year capability?

Mr. BAKER. But adverse year capacity statistics.

Mr. STONG. I think we have probably answered a good many of these questions in the discussion but we may resume them.

Mr. AANDAHL. Do you want to go to No. 4 now?

Mr. STONG. Mr. Aandahl has said that this is average water year energy and adverse water year capability.

Mr. AANDAHL. May I ask the engineers to comment on No. 4, please.

Mr. STONG. Does the Department believe that new adequacy of flow studies would be useful in the operation of the project? Are they being undertaken and when will they be available?

Mr. CAMPBELL. Those are analyzed and forecast annually, sir, by the corps in which we sit in and review the results. Actually there seems to be no need for changing that procedure.

Mr. STONG. There was an adequacy of flow study around 1950, was there not?

Mr. CAMPBELL. Yes, I think that is right. I think that was made in 1950 or 1951.

Mr. STONG. Has there not been discussion in the Interagency Committee recently of a new adequacy of flow study?

Mr. CAMPBELL. I am not informed if there has been one.

Mr. STONG. I understand at a meeting in Denver or Cheyenne there was some resolution about making a new adequacy of flow study.

Mr. AANDAHL. Was that a Missouri Basin Interagency meeting?

Mr. STONG. Yes.

Mr. AANDAHL. There may be something of that type underway at the field level.

Mr. STONG. But you don't know of it here?

Mr. AANDAHL. No; only insofar as information of that kind might work into the annual reviews that we make.

Mr. STONG. No. 5.

Mr. AANDAHL. No. 5, again, deals with the application of the O'Mahoney-Millikin amendment and the question is asked as to the amount of additional power that would be available if it were followed. Of course, that just has not been studied and we have no information on it.

The next question deals with what provision, if any, has been made for purchasing power to firm hydro output. We have entered into many contracts where it is possible to purchase energy on a when-needed basis to firm the power up to the capabilities of an average water year. I think that is the extent to which we are purchasing power for firming purposes in the Missouri Basin.

Mr. STONG. With whom do you have such contracts now?

Mr. AANDAHL. Could you list some of those?

Mr. BAKER. We have contracts with several utility companies as well as some of the cooperative organizations and power districts. We have interchange and surplus purchasing arrangements with Black Hills Power & Light Co., the Otter Tail Power Co., the Dakota Power Cooperative, I believe with Northern States Power Co., Nebraska Public Power System. There are several organizations.

Mr. STONG. Is this a when-needed or when-available basis?

Mr. BAKER. We endeavor to make as many such contracts as we possibly can with utility or generating organizations with which we are interconnected. Since they are all made on an if-as-and-when basis at the determination of the supplier, we would like to have as many possible arrangements as we can so if a shortage of energy occurs we have a place to get it. This is when needed and when available.

Mr. AANDAHL. I might say in the last several years we have used those purchase and interchange agreements quite extensively to supply our preference customers.

Mr. STONG. I think we have answered No. 7, have we not, except as to diversity? Is allowance made for diversity of load?

Mr. BAKER. Yes; it is in all of our determinations.

Mr. STONG. No. 8.

Mr. AANDAHL. I believe that again is a question that should be answered by the Corps of Engineers. I don't think we have the specific statistics that are asked for there.

No. 9 raises the question of the study of the economic feasibility of Federal thermal plants in the upper Missouri Basin area to firm up additional hydroelectric power.

When I think of the construction of a sizable, efficient, modern steamplant, I think of its entire capability being firm power. Of course, it has to be integrated with a system for standby purposes, but it is firm power in its entirety, and you don't build a plant of that kind to firm up hydro. There are elements of a steamplant capability that can be integrated with other elements of hydro capability which became very effective in the overall power production. I do not think it would be in order to build Federal steamplants for the specific purpose of firming up Federal hydro. There is a great deal of interesting information. I have before me a breakdown of the total amount of Federal power in the United States. As of June 30, 1958, there were 14,449,880 kilowatts of installed Federal hydro, which is 11.2 percent of the total generating capacity in the United States. In addition to that, there were 6,494,750 kilowatts of steam in the TVA system, making a total of 20,944,630 kilowatts of Federal power in the United States, which is 16.2 percent of the total power.

The total generating capacity in the United States on that same date, June 30, 1958, was 134,332,000 kilowatts. That is less the industry-owned generating capacity. The 1958 summer peak, which corresponds to the June 30 date, was 109 million kilowatts, which means that nationwide there are reserve capabilities of about 19 percent. This is an analysis that one of my staff members made, getting part of the information from the Federal Power Commission.

I have an industry analysis that shows reserve capabilities in the United States around 20 percent or a little bit more. Then I looked at that industry analysis for Federal Power Commission region 6, and I find that the reserve capabilities there varying between winter and summer peaks and adverse and median water years show reserve capabilities from 33⅓ percent up to as much as 47.7 percent.

Again I asked a staff member of mine to go to the Federal Power Commission records and see if he could not break down this region 6.

Incidentally, region 6 includes almost identically the eastern Missouri Basin marketing area plus the States of Wyoming and Colorado. He attempted to exclude the States of Wyoming and Colorado, and he came up with a reserve capability in the Missouri Basin itself of 34½ percent. I think we can say in the analysis we are making here that nationwide there is reserve capacity of 20 percent and in the Missouri Basin there is reserve capacity of 30 percent.

I think it is much more logical to think in terms of integrating the hydro that we have with the capabilities that are presently in the basin. We will get the greatest efficiency, we will do the greatest good for the area, and in the long run, it will be to the best interests of the preference customers to handle it that way.

Mr. STONG. I take it that will be your policy, to attempt to integrate with existing thermal capacity.

Mr. AANDAHL. Yes; we want to do that to the greatest extent possible. That is what gives real value to these Federal hydroplants. I have always been a strong supporter of developing whatever hydroelectric capacity can be developed in connection with these large multipurpose projects that are being built by the Federal Government.

Mr. STONG. In that process of integration do you expect to get additional firm power to meet the requirements of the preference customers?

Mr. AANDAHL. There will be some elements of it. I can't give you detailed or specific information because integration possibilities are just in the process of study and development. In every step we make we are looking for the opportunities of being helpful to the preference customers insofar as that fits into what seems to be the logical way to handle this Federal hydro.

Mr. STONG. Very well, sir. The next question is No. 10. The question is what additional power revenues might be obtained if slack water were substituted for flowing water navigation.

Mr. AANDAHL. That again goes back to the amendment which we discussed and we do not have any studies on those assumptions.

Mr. STONG. No. 11 is the question of the Department of Interior utility responsibility.

Mr. AANDAHL. It has been our position that Federal hydroelectric power should be a supplement and an aid to the power supply entities that exist in local communities, with the primary responsibility for the supply of power resting with the local entities. As was indicated in the figures that I just read to you, the total Federal power at the present time is only 16.2 percent. In supplying that power, the Department of Interior up to the present time has invested $1,590 million. TVA has invested $1,764 million. I do not have the figure for the Army. I am not going to try to estimate it. I think it might be a little larger than either of the others.

The Federal Power Commission estimates of generating capacity needed in the United States to meet load growth, including reserves of 15 percent—that is 5 percent less than we have at the present time—is 142 million kilowatts in 1958, 167 million kilowatts in 1960, 285 million kilowatts in 1970, and 420 million kilowatts in 1980.

It is roughy estimated that the cost of meeting this average increase would be about $5 billion a year.

I think it is incumbent on the Federal Government to encourage a maximum of local responsibility in meeting the growing power needs of the Nation. Because of that fact, we have tried to emphasize in all of our Federal power marketing during the period that I have been in my present position that the responsibility for total needs rests with local entities. We will be just as helpful as we can with the Federal power that is available from these multipurpose projects, and we know that power is of great economic advantage to the local people and particularly to the preference customers.

We do feel that it would be very unwise for us, as the marketing agent for all Federal power except that which is in the Tennessee Valley, to try to establish a total utility responsibility for any group of customers. We would be committing the Congress to expenditures of immeasurable amounts of money if we were to establish a policy of that kind. I think we would be derelict in our duty if we did.

The CHAIRMAN. Does that conclude your answer to this question?

Mr. AANDAHL. It does.

The CHAIRMAN. Could he take these questions and answer them in writing. The Senate will meet in a few minutes and I will have to leave. You may proceed with the questions but I will have to leave because the Senate is in session at 12 o'clock and I have several matters before the Senate.

Mr. STONG. Do you prefer to proceed by submitting written answers or do you wish to answer them?

Mr. AANDAHL. As you wish.

The CHAIRMAN. It would simplify it if you could answer them in writing. I think it will save a lot of time.

Mr. AANDAHL. We will be very glad to do that if that is your wish.

Mr. STONG. There is one other question, if I may, Mr. Chairman: Does the Bureau of Reclamation now have authority to build thermal generation if it becomes desirable? It is my understanding that in a Central Valley case there is a solicitor's opinion stating that where it facilitates the marketing of available Federal power the authority does exist. I wonder if you could give us a memorandum on whether or not the authority exists in the Bureau to build a thermal plant, if desirable.

Mr. AANDAHL. We will check into that information and supply it, sir.

(The information requested follows:)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., April 29, 1959.

Hon. JAMES E. MURRAY,
Chairman, Interior and Insular Affairs Committee,
U.S. Senate, Washington D.C.

DEAR SENATOR MURRAY: At the recent Missouri River Basin power hearings inquiry was made as to the existence of an opinion of the Solicitor of the Department dealing with the authorization of a steam plant in connection with the Central Valley project.

While the matter was not passed upon by the Solicitor, it was the subject of an opinion dated May 12, 1949, by the then chief counsel of the Bureau of Reclamation, Mr. Clifford E. Fix. A copy of Mr. Fix's opinion is enclosed. The opinion is set forth in full at page 2529 of the printed Senate hearings on the Interior Department appropriation bill for 1950 (H.R. 3838, 81st Cong.).

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D.C., May 12, 1949.

To: Commissioner.
From: Chief counsel.
Subject: Authorization of Central Valley project steam plant.

In accordance with your request I am setting out below my views on the statutory and constitutional authority for the construction of a steam-electric generating plant as a part of the Central Valley project, California, to serve as an answer to the statement on these matters made by Mr. Robert H. Gerdes, general counsel for Pacific Gas & Electric Co., at the hearings before the subcommittee of the Committee on Appropriations, House of Representatives, on the Interior Department appropriation bill for 1950 (hearings, pt. 2, p. 822). The statement was offered in opposition to a requested appropriation of moneys with which to initiate construction of a Central Valley project steam plant during the fiscal year 1950. Contrary to Mr. Gerdes, I believe that the steam plant is fully authorized.

First, to indicate the significance of the questions raised by Mr. Gerdes and to provide a basis for considering the relevant statutory and constitutional provisions, I am setting down the factual relationships of this steam plant to the Central Valley project. As reported to me, they are briefly as follows:

The object of the Central Valley project steam-electric powerplant is to firm up the secondary energy produced or produceable at the Central Valley project's hydroelectric plants at the Shasta and Keswick Dams. The presently installed capacity at the Shasta plant is 300,000 kilowatts. Installation of an additional 75,000-kilowatt generating unit is underway. Also, three generating units, totaling 75,000 kilowatts, are being installed at the Keswick plants. Thus, the total hydro installation will be 450,000 kilowatts. However, a firm load of only

about one-half of this installed capacity can be carried by the hydro plants alone, due to water deficiencies in dry years and due to the fact that water releases are governed by navigation, flood control, and irrigation requirements. These do not enable a pattern of energy production that fits the load requirements of Federal agencies, public bodies, cooperatives, or industry. Without steam support, only about 45 percent of the estimated annual hydrogeneration of 1,904 million kilowatt-hours can be marketed as firm energy. The addition of a relatively small amount of ever-ready steam generation would increase enormously the usefulness of the hydro plants and make large quantities of low-cost energy generally useable and salable. A firm load then could be carried having a peak equivalent to the total hydroelectric installation. Also, it would then be possible to market 86 percent of the hydro energy on a firm basis. Even with this steam plant there would be 238 million kilowatt-hours of nonfirm energy per year available from the hydro plants. At present, the market for this and all other secondary energy is limited to Pacific Gas & Electric Co. for it alone has the required firming capacity. This company now enjoys a virtual monopoly in power supply in northern and central California.

The feasibility of the Central Valley project depends on power revenues. The report of the Bureau of Reclamation on the allocation of costs and feasibility of the project, published as House Document No. 146, 80th Congress, 1st session, shows the estimated cost of the authorized features, including a steam plant, as $384,314,000, based on January 1, 1946, prices. Of this total, $104,143,600 represents the power investment. However, power revenues are required to repay, over and above power operation, maintenance, and replacement charges, a total of $227,757,693. The net returns from power sales available to assist in the repayment of irrigation investment would be much more with than without the steam firming capacity, even if the market and price for secondary energy were assured, as they are not, for the payout period of the project.

Steam firming capacity then would broaden the market for the Government's hydro energy, thus removing the financial threat to the Government implicit in dependence on one power company for the sale of 55 percent of the energy produced. The widening of the available market also would greatly reduce the possibility of wasting the capacity and energy at the Shasta and Keswick plants. Finally, steam firming capacity would enable wide public participation in the benefits of the low-cost energy available from the Central Valley project in accordance with the traditional power sales policy of the Congress.

STATUTORY AUTHORITY FOR CONSTRUCTION OF CENTRAL VALLEY PROJECT STEAM-ELECTRIC GENERATING PLANT

It is my opinion that the Central Valley project has always included a steam plant and that in any event the construction of a steam plant as a part of the project was authorized by the act of August 26, 1937 (50 Stat. 844, 850), which reauthorized the project. I shall discuss these two points in the order named.

The 1937 act provided as follows:

"That the $12 million recommended for expenditure for a part of the Central Valley project, California, in accordance with the plans set forth in Rivers and Harbors Committee Document Numbered 35, Seventy-third Congress, and adopted and authorized by the provisions of section 1 of the Act of August 30, 1935 (49 Stat. 1028, at 1038), entitled 'An Act authorizing the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes,' shall, when appropriated, be available for expenditure in accordance with the said plans by the Secretary of the Interior instead of the Secretary of War: *Provided*, That the transfer of authority from the Secretary of War to the Secretary of the Interior shall not render the expenditure of this fund reimbursable under the reclamation law: *Provided further*, That the *entire Central Valley* project, California, heretofore authorized and established under the provisions of the Emergency Relief Appropriation Act of 1935 (49 Stat. 115) and the First Deficiency Appropriation Act, fiscal year 1936 (49 Stat. 1622), is hereby reauthorized and declared to be for the purposes of improving navigation, regulating the flow of the San Joaquin River and the Sacramento River, controlling floods, providing for storage and for the delivery of the stored waters thereof, for the reclamation of arid and semiarid lands and lands of Indian reservations, and other beneficial uses, and *for the generation and sale of electric energy as a means of financially aiding and assisting such undertakings and in order to permit the full utilization of the works constructed to accomplish the aforesaid purposes: Provided further*, That, except as herein otherwise specifically provided, the *pro-*

visions of the reclamation law, as amended, shall govern the repayment of expenditures and the *construction, operation, and maintenance of the dams, canals, powerplants, pumping plants, transmission lines, and incidental works deemed necessary to said entire project*, and the Secretary of the Interior may enter into repayment contracts, and other necessary contracts, with State agencies, authorities, associations, persons, and corporations, either public or private, including all agencies with which contracts are authorized under the reclamation law, and may acquire by proceedings in eminent domain, or otherwise, all lands, rights-of-way, water rights, and other property necessary for said purposes: *And provided further*, That the said dam and reservoirs shall be used, first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses; and, third, for power." (Italic added.)

(This act was amended by sec. 2 of the act of October 17, 1940 (54 Stat. 1198, 1199), in a manner not material to the question under consideration.) It will be noted that the quoted provisions reauthorized an "entire project" recited as having been previously authorized and established under the Emergency Relief Appropriation Act of 1935 and the First Deficiency Appropriation Act for the fiscal year 1936, and that no specific works were mentioned as comprising the reauthorized project. It also will be noted that the quoted language indicates that whatever dams, canals, powerplants, pumping plants, transmission lines, and incidental works are deemed necessary to the entire project are authorized for construction.

What was the "entire project" which was reauthorized? The First Deficiency Appropriation Act for the fiscal year 1936 furnishes no clue since it only provided funds for continuation of the "Central Valley project." However, examination of the documents and circumstances relating to the authorization of the Central Valley as a Federal undertaking under the Emergency Relief Appropriation Act of 1935 leads me to believe that the "entire project" was primarily a plan, developed largely by the State of California, for comprehensive water resources development and utilization. For the accomplishment of the plan, certain key engineering works had been selected and additional works, including a steamplant, were expressly contemplated as needed although detailed studies to support their selection had not been made. I have concluded that the "entire project" included the key works and auxiliary facilities as required to effectuate the plan.

The first description of the Federal Central Valley project appears in an allotment letter for construction of works for irrigation and reclamation made by President Roosevelt, dated September 10, 1935. The description was as follows:

"Location	Character of work	Allotment	Project
California: Central Valley, Sacramento. NEC 1313.	Central Valley project—*The Central Valley project is the result of careful investigation extending over a period of 10 years*, during which more than ¾ of a million dollars have been expended. The purpose is to store and conserve flood and waste waters of the Sacramento and San Joaquin Rivers and their tributaries so that the entire flow can be used for flood control, improvement of navigation, irrigation, the development of hydroelectric power and the protection of the delta lands at the junction of the 2 rivers against injury from salt. In an *area so extensive there are features of this comprehensive project that can be developed separately as useful economic units which will ultimately form a part of the completed project.* (Italic added.) The features selected and recommended for construction with the $20,000,000 alloted to the project are the following: The Friant Reservoir to conserve and store the surplus waters of the San Joaquin River. The cost of this reservoir will be $14,000,000. It can be built within the fiscal years 1936 and 1937. There are other useful and necessary features of the completed scheme which will add to the value of the Friant Reservoir, which can be built with $6,000,000, and be built in the fiscal year 1936 and 1937. One feature is distribution canals from the Friant Reservoir to the lands needing additional water for irrigation to the north and south of this storage. Another alternate feature is to build the Contra Costa conduit costing $2,500,000, and a smaller mileage of the distribution canals from the Friant Reservoir, before referred to, costing $3,500,000; *or a 50,000-kilowatt steam-electric plant costing $3,500,000.* (Italic added.) The basis of this development, therefore, is the Friant Reservoir. Either of the other features combined with the Friant Reservoir will be operating and self-liquidating units and will greatly improve the financial and economic situation in the San Joaquin Valley and in the State of California. A combination of some feature with Friant not exceeding a total cost of $20,000,000 will be adopted after inspection on the ground by the Commissioner of the Bureau of Reclamation."	$20,000,000	O.P. 5-24

Subsequently, this allocation was reduced and still later it was largely rescinded. A new allocation letter was signed by the President on November 16, 1935, which contained the following description:

"Location	Character of work	Allotment	Project
California: Central Valley, Sacramento.	Central Valley project—The Central Valley project is the result of careful investigation extending over a period of 10 years, during which more than ¾ of a million dollars have been expended. The purpose is to store and conserve flood and waste waters of the Sacramento and San Joaquin Rivers and their tributaries so that the entire flow can be used for flood control, improvement of navigation, irrigation, the development of hydroelectric power and the protection of the delta lands at the junction of the 2 rivers against injury from salt. The project therefore involves storage reservoirs on the Sacramento and San Joaquin rivers and distribution works in the 2 valleys. The reservoir construction constitutes the key to the entire development because the conservation of flood-waters is necessary to fulfill all other purposes. The Contra Costa conduit diverts water from the San Joaquin above any possible salt-water invasion and supplies cities and industries with an adequate quantity suitable for domestic and industrial uses. This is urgently needed at once. The logical development thus demands that construction of the necessary reservoirs, the Contra Costa conduit, the distributing canals, and the other appurtenant works be carried on concurrently. However, no contractual obligations are to be created in excess of the amount allocated."	$14,000,000	O.P. 5-24.

It will be noted that the changes in language in the two allocations related almost exclusively to the units of the Central Valley project to be constructed with the moneys made available, a steamplant being mentioned only in the earlier allocation; that the Central Valley project itself is described alike in both orders and only in terms of purposes and as a result of careful investigation over a 10-year period.

After the allocations of funds were made to initiate construction of the Central Valley project, the project was again described in a feasibility report thereon made by the Secretary of the Interior, dated November 26, 1935, and approved by the President on December 2, 1935. The report stated, among other things, that—

> "The Central Valley project embodies a plan for the conservation, regulation, distribution, and utilization of the water resources of the Sacramento and San Joaquin Rivers to provide urgently needed water supplies for existing agricultural, industrial, and municipal developments in the Sacramento and San Joaquin valleys and upper San Francisco Bay region * * *. In addition to providing new water supplies to meet serious problems of water shortage, the project contemplates the restoration of commercial navigation on the upper Sacramento River, increased flood protection for the valley lands, and incidentally to the generation of about a billion and a half kilowatt-hours annually of hydroelectric energy."

This feasibility report went on to describe the "principal engineering features" of the project, the entire cost of which was to be repaid from water and power revenues, but made no mention of a steamplant. The omission seems to be the basis for the contention of Mr. Gerdes that a steamplant was not a part of the authorized project. I do not believe that the omission has that significance since the steamplant is not a principal engineering feature. It is an auxiliary to the Shasta and Keswick hydroelectric plants which are listed in the feasibility report as principal engineering features, although not under those names or in the sizes to which they have been built. There is nothing in the report to indicate that the Central Valley project therein covered was less in scope than the Central Valley project for which the President had allotted funds and which included a steamplant.

The allocations and the feasibility report were made, and the Central Valley project was undertaken by the United States through the Bureau of Reclamation, only after efforts by the State of California to finance a Central Valley project on a loan and grant basis through the Public Works Administration had failed. It has always been taken for granted, therefore, that the Central Valley project referred to by President Roosevelt in the allocation letters and by the Secretary of the Interior in his feasibility report was the State's Central Valley project, specifically approved and authorized by the Central Valley Project Act of 1933, which, after referendum petition filed, became effective on approval by the voters of California at an election in November 1933 (sec. 11400 et seq., California Water Code). This act provided for construction of the Central Valley project through the State Water Project Authority. The project was defined as comprising the same general units listed as "principal engineering works" in the feasibility report of the Secretary of the Interior, but those units were declared to "include such plants and works for the generation of electric energy by steam or other power, and such electric transmission lines and facilities for the sale, use, and distribution of electric power as the authority determines to be necessary for making a reasonable, proper, and advantageous sale, use, and distribution of electric power made available by the units (sec. 11295, California Water Code). There is no basis for assuming now, contrary to what has long been accepted as correct, that President Roosevelt and Secretary Ickes took over, at the behest of the State of California, a multiple-purpose water-development project, except as to its essential power facilities. Evidence to the contrary is furnished in a letter to Senator Hayden, dated May 19, 1942, in which the President declared in part:

"* * * It does not seem to me to be good policy or sound finance to fail to provide for transmission lines and steam facilities necessary to enable the Government to market Central Valley power without dependence upon a private power company.

"I had this thought in mind when I approved a steam plant in the allocation of funds which I made in 1935 to launch this project, and Congress has twice appropriated money for these transmission lines * * *."

Similarly, President Roosevelt wrote to Speaker Rayburn on June 23, 1942, that the steam plant and transmission lines were "vital to the success of the project."

Clearly, definition of the Central Valley project which was authorized and established under the Emergency Relief Appropriation Act of 1935 in terms of the plan authorized by the State of California, certain principal engineering works or units and whatever auxiliary facilities, particularly a steam plant and transmission lines, were needed, is the only definition which explains and synthesizes all the documents and historical circumstances referred to above.

Lastly, this definition reflects best the conception which the Congress must have had of the project at the time of its reauthorization by the act of August 26, 1937, quoted above. This conception is mirrored in the language in that act "except as herein otherwise specifically provided, the provisions of the reclamation law, as amended, shall govern the * * * construction, operation, and maintenance of the dams, canals, powerplants, pumping plants, transmission lines, and incidental works deemed necessary to said entire project * * *."

Mr. Gerdes has argued that reclamation law does not authorize the construction of a steamplant, ergo, the Central Valley, which was undertaken by the United States under reclamation law, cannot legally include a steamplant. I believe that both the premise and the conclusion are unsound. I will make only brief comments on them, however, since the question of authorization under reclamation law is now beside the point. Mr. Gerdes has overlooked the fact that the 1937 reauthorization act removed the Central Valley project from the general class of projects authorized under reclamation law. It was reauthorized as a multiple-purpose water-development project to be used "first, for river regulation, improvement of navigation, and flood control, secondly, for irrigation and domestic uses, and third, for power." A nonreimbursable expenditure was authorized of $12 million because of the navigation, flood control, and other general benefits from the Shasta Dam. At this time reclamation law did not authorize multiple-purpose water-development projects and required that the entire cost of reclamation projects be repaid or returned in water and power revenues. There could be other disparities between the Central Valley project and a standard reclamation project (1937). Thus assuming a lack of authority under reclamation law to include a steamplant in the Central Valley project at its inception, the 1937 act of the Congress which reauthorized the "entire project" clearly constituted ratification of the feature.

However immaterial Mr. Gerdes' contention with respect to authorization of a steamplant under reclamation law. I do not think it should go entirely without challenge. For the sake of the record, I point out that the broad authority conferred on the Secretary by the Reclamation Act of 1902 necessarily included authority to construct steam or hydroelectric-generating facilities or other facilities necessary to the operation of irrigation works. Later, by the act of April 16, 1906 (34 Stat. 112), express authority was given to dispose of surplus power available from a power development required for irrigation purposes and to realize upon the opportunities for power development afforded by an irrigation project. This 1906 act further provided that revenues derived from the disposal of power should be covered into the reclamation fund and placed to the credit of the project from which the power was derived. An opportunity for the development of other than hydroelectric power could not be presented by an irrigation project. But assuming an opportunity for hydroelectric power development, there is no limitation on the type of auxiliary power facilities that may be constructed to fully utilize the hydro potentialities or to sell the hydro-generated power. There is left for determination by the Secretary of the Interior the power facilities to be included as integral parts of the irrigation project. This determination was made subject to the approval of the President by section 4 of the act of June 25, 1910 (36 Stat. 835), and subsection B, section 4, of the act of December 5, 1924 (43 Stat. 702). Since authorization and reauthorization of the Central Valley project, the provisions under discussion relating to power development and disposal in the act of April 16, 1906, and to authorization of reclamation projects under the act of June 25, 1910, and the act of December 5, 1924, have been superseded largely by the Reclamation Project Act of 1939. However, the latter act also leaves to the Secretary of the Interior the determination of the specific works, including power facilities, constituting a multiple-purpose water development project having irrigation as an important purpose.

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To go back to the question of authorization of a steam plant as part of the Central Valley project. If the definition, stated above, of the "entire project" which was reauthorized is not accepted, it would necessarily follow that the steam plant was authorized by the reauthorization act of 1937. Only in these two ways can full effect be given to the language "and the provisions of the reclamation law, as amended, shall govern * * * the construction, operation, and maintenance of the * * * powerplants * * * and incidental works deemed necessary to said entire project." The steam plant is one of the powerplants deemed necessary to the entire project. Its uses fall squarely within one of the statutory purposes of the reauthorized entire project stated as "for the generation and sale of electric energy as a means of financially aiding and assisting such undertakings and in order to permit the full utilization of the works constructed to accomplish the aforesaid purposes."

My opinion that the construction of a steam-electric generating plant is an authorized feature of the Central Valley project is the settled administrative and executive view. As far back as 1941, moneys were requested of the Congress to initiate its construction. The budget request was predicated on authorization and was supported by the Secretary of the Interior, the Commissioner of Reclamation, the California Water Project Authority, and others. I quote from a letter, dated April 17, 1941, from Mr. Leland Olds, Chairman of the Federal Power Commission, to Representative Clarence F. Lea, which was made a part of the record of the hearings in the House and Senate on the Interior Department appropriation bill, 1942:

"The Commission considers the Antioch steam station as an integral part of the Central Valley project, necessary to enable the Government to secure the maximum public advantage from the marketing of the power which it will develop at the Shasta Dam. Unless it is completed prior to the time when the Government undertakes to market this power, the Government will have a minimum of firm power to sell and, in its bargaining, may well be at the mercy of a single purchaser able to firm up the entire Shasta output.

"The Commission interprets the decision of the Supreme Court in the Ashwander case as indicating the Government should have the greatest possible latitude in marketing the power from its dams in such a way as best to serve its public policy. To assure this objective the Court held that the Government should not be limited to a single purchaser. In terms of the Central Valley project, this means that in marketing Shasta power the Government should not be limited by the necessity of finding a purchaser able to firm up the power which it has to sell.

"If the Government were to be so limited it would be placed in a disadvantageous position in its effort to give the people of California the greatest possible benefit from the Central Valley project, even though the final decision may be to market the power through the company's system. Without the Antioch steam station the company would be placed in a superior bargaining position in relation to a project in which the Federal Government will have large funds invested.

"In the light of all the circumstances outlined in this memorandum the Commission finds no reason to change its recommendation, made at the time the Bureau of the Budget was considering the Bureau of Reclamation proposal to expedite the Central Valley program, that the expediting of the Shasta and Keswick projects and the construction of the Antioch steam station be approved in order to assure adequate power supplies for the requirements of the defense program in California in general accord with public policy."

Pacific Gas & Electric Co., resisted the appropriation, and has done the same on all subsequent occasions, on the ground of no necessity asserting that the company had adequate firming capacity and was willing to purchase the entire hydroelectric output. The company's argument would seem to concede authorization, if the plant is necessary, and would seek to substitute its judgment of necessity for that of the officials responsible for the administration of the laws enacted by the Congress relating to the Central Valley project. The company's behavior in connection with the Interior Department appropriation bill, 1942, was characterized by the Federal Power Commission, in a proceeding entitled "In the Matter of Pacific Gas and Electric Company," which involved a license for power developments on the Feather River in California, as follows (2 F.P.C. Report, pp. 392, 394 (1941)):

"* * * On the basis of these assurances that power capacity would be required in the applicant's system and would not otherwise be available, and our defense power studies, the Commission, on February 19, 1941, authorized the

issuance of a license for the Cresta plant of 68,000 kilowatts and the Pulga plant 80,000 kilowatts capacity, respectively, upon certain express conditions.

* * * * * * *

"Applicant did not disclose to the Commission until approximately 6 weeks after our order of February 19 that its construction schedule called for definite construction of 82,000 kilowatts of additional generating capacity not previously reported * * *

* * * * * * *

"It is apparent that failure of applicant to advise the Commission of its construction schedule and its decision to construct additional generating capacity was due to conflicting purposes which it desired to achieve. Applicant desired a license for construction of two large hydro power developments on the Feather River to give it further control over that important stream. At the same time it opposed construction by the United States of any steam generating capacity which might be used in competition with its own power system. Because it desired a license from the Commission, applicant reported to the Commission that there would be a lack of sufficient generating capacity and did not fully disclose to the Commission its plans for additional capacity until after such license had been authorized. At the same time, applicant used its decision to construct 82,000 kilowatts of additional generating capacity as an argument against any appropriation by Congress for construction of the Antioch steam plant as part of the Central Valley project. The Antioch steam plant, it argued, would be uneconomic because the applicant's construction schedule demonstrated *an excess of generating capacity* in the area to be served by the Central Valley project.

"The *opposition by applicant to construction by the United States of a steam plant at Antioch is not based upon any lack of understanding as to the necessity or desirability of steam generating capacity to 'firm up' the power output* from the Shasta hydroelectric plant of the Central Valley project (a plant with high energy output but relatively low firm capacity).

"Both witnesses Downing and Dreyer admitted that the Central Valley project would require standby steam capacity if operated as the sole source of power supply for an independent system. *The opposition of applicant rather goes to its determination to see that the Central Valley power output is not distributed through a competitive public agency, but that it be distributed by and inure to the benefit of the Pacific Gas & Electric System.*

"In addition to these objectives, however, Mr. Downing admitted that, if the Antioch steam plant is not built by the United States, his company would not be required to pay as much for any power which it might purchase from the Central Valley project as it would be required to pay with that plant in operation. Thus, it is evident that by making the Central Valley project dependent upon the Pacific Gas & Electric System for standby plants to firm up the Shasta power output, the applicant would cut off possible competition, utilize its own steam generating plants, and purchase power from the Shasta plant at a much lower figure than otherwise.

"The Central Valley project is being built to improve navigation on the Sacramento River, to increase flood protection along the Sacramento and San Joaquin Rivers, to furnish a supplemental irrigation supply of water for producing farmlands, to control salinity in the delta region, to supply water for industrial and domestic use, and to produce electric power. Since the United States has a large investment in the Central Valley project and will spend millions of dollars more to make this development function as planned, the Commission obviously will do nothing to lessen the value of any revenue-producing product of that development.

"As an integral part of the Central Valley project, the Antioch steamplant would allow greater flexibility in water-control operations to provide water for irrigation, salinity control, and industrial and domestic water supply. Integrated steamplant operation as a part of the Central Valley power system would assure uninterrupted power service and a dependable power supply for project pumping and commercial use. *Construction of the Antioch steamplant by the United States is essential to secure for the benefit of the water users of the valley and the benefit of the United States the maximum economic return from the hydroelectric powerplant output of the project. Without the Antioch steamplant the Government will be unable to maintain a maximum supply of firm power and in its bargaining will be at the mercy of a single purchaser.*" [Italic added.]

No moneys were made available by the Congress for the steamplant for the fiscal year 1942, and a request for them was made again for the fiscal year 1943. This time the Congress allowed $200,000 for completion of necessary design work but denied funds to commence actual construction. This decision appears to have been based, at least in large part, upon the scarcity of materials. In this connection, attention is invited to a letter, dated March 19, 1942, from Mr. Donald N. Nelson, Chairman of the War Production Board, to Mr. Jed Johnson, chairman, Subcommittee on Interior Department Appropriations (printed on p. 1110 of the House hearings) as follows:

"On the basis of our study, we regard the hydroelectric plants and appurtenant facilities designated in the budget request as essential in providing adequate power for war production. *We also believe that the Antioch steamplant is an essential part of the ultimate development of the Central Valley project and therefore strongly recommend that sufficient funds should be provided at once to complete all the engineering work necessary in preparation for the actual construction.* However, we are unable to say at this time when priorities could be made available to secure the steam-station equipment necessary to proceed with the construction. * * * As soon as it becomes possible to locate new steam generation in the San Francisco Bay region, we should regard Antioch as the first choice." [Italic added.]

Additional funds for planning for the steamplant were sought for the fiscal year 1946. These were denied by the Congress on the recommendation of the conference committee of the House and Senate for reasons which had no reference to the question of authorization (Daily Congressional Record, June 25, 1945, p. 6769). The debate in the House on the conference report included references to the plant as authorized. For example (see Congressional Record, June 28, 1945, p. 6984):

"Mr. OUTLAND. * * * The Central Valley project was built for the people. Shasta Dam can give them, among other multiple-purpose benefits, low-cost power to light their homes, to make their work easier, to attract new industries offering job opportunities to returning servicemen, and others.

* * * * * * *

"If the industrial and agricultural regions of California can get Shasta power without paying at the tollgate of P.G. & E., the energy will be delivered to them at charges that compare well with the low rates for electric energy in the rest of the United States.

"It is up to the Congress to decide whether to favor the few or to help the many. I hope that next year we restore this cut. * * *

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"Mr. GEARHART. The gentleman from California should be commended for his statement. *At the same time it would be appropriate to point out at this point in your remarks that the two items to which you have referred were authorized by the Congress in the original Central Valley authorizing legislation. In asking for appropriations to cover their construction cost we are merely asking for the financing of that which was within the contemplation of the membership at the time the Central Valley project was first presented to the Congress.* I am delighted to receive the assurances of the managers of the conference that they will not oppose appropriations for the steam standby plant, the transmission lines, and the Kings River project at the proper time.

"Mr. OUTLAND. *I thank the gentleman. He is quite correct in his statement.*

"Mrs. DOUGLAS of California. * * * I reiterate that to complete and make useful the Central Valley project there must be built a transmission system and standby steam plant as soon as possible. California must have these facilities as a necessary part of her development. Cheap water and cheap power will provide for California a basis for achieving the essential balance of industry and agriculture necessary to a healthy postwar economy. We cannot have jobs for all just by wishing for them. We must take the necessary measures to create new basic wealth.

* * * * * * *

"In order to do that, the project must be finished as soon as possible. Finishing the project means building transmission lines and a steam plant in order to bring the power that will be generated at Shasta and Keswick at the cheapest possible cost to the places where it can be used. What we have done so far is to build a house without building the roads leading to it.

* * * * * * *

"Mr. ENGLE of California. * * * The situation is that the Bureau of Reclamation has been denied funds by the Congress to make the studies for the transmission lines and a steam plant this coming fiscal year of 1946. *This will not affect the authority of the Bureau of Reclamation to build the lines and necessary standby plants, which are a part of the Central Valley project. These facilities can be built when needed, provided the Congress appropriates money for them at that time.* I am assured by the Bureau of Reclamation that, since the action we are taking today is without prejudice, the Bureau will submit estimates for the Congress to consider when these facilities are required. The Appropriations Committee, through its spokesmen, the House managers on this Interior Department appropriation bill for 1946, has assured the Congress that it will give due and unprejudiced consideration to those estimates of the Bureau of Reclamation when they are submitted at a later time." (Italic added.)

I will not burden this memorandum with further references to the history of appropriation requests for the Central Valley project steam plant. So far as I am aware, there has been general legislative concurrence or acquiescence in the administrative and executive view that the plant is authorized.

CONSTITUTIONAL AUTHORITY FOR CENTRAL VALLEY PROJECT STEAMPLANT

Perhaps the principal constitutional basis for the Central Valley project, including its hydroelectric generating plants, is to be found in the authority of the Federal Government to regulate interstate and foreign commerce. The purposes of the project include flood control, navigation, water supply for irrigation and other beneficial uses, and power production. "Flood protection, watershed development, recovery of the cost of improvements through utilization of power are parts of commerce control" no less than navigation (*United States* v. *Appalachian Electric Power Co.*, 311 U.S. 377, 426 (1940)). "* * * the fact that Congress has introduced power development into this project as a paying partner does not derogate from the authority of Congress to construct the dam for flood control, including riverflow. The power project is not unrelated to these purposes" (*Oklahoma* v. *Atkinson Co.*, 313 U.S. 508, 530 (1941)). These cases make it clear that the Federal Government under the commerce clause of the Constitution has full authority to develop any given watershed in a comprehensive manner and that this includes the right to develop the full power potential of the river basin as well as to improve navigation, control floods, etc.

In the Central Valley project the power potential cannot be adequately nor properly utilized without steamplant generation facilities. Steam generation is a closely related and a necessary part of the full development of the hydro potentialities. It follows that the generation of energy by steam on the Central Valley project as a supplement to its hydro production is authorized under the commerce clause of the Constitution.

However, the authority of the Federal Government to construct a steamplant does not rest on this provision alone. The project's hydroplants and the energy which they are capable of producing are property of the United States, subject to disposition by the Congress under the property clause of the Constitution (Constitution, art. IV, sec. 3, clause 2; *Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288 (1936)). This power of disposition is without limitation (*United States* v. *Gratiot*, 14 Pet. 526, 536–37 (1840)). It may be by any appropriate means and in accordance with such public policy as the Congress chooses (*United States* v. *San Francisco*, 310 U.S. 16 (1940)). The Federal Government, with respect to its property, may exercise the rights of an ordinary proprietor. Among these rights is that of improving property to enhance its usefulness and value. It is, for example, in the exercise of this right that irrigation works may be constructed to make habitable the public domain. (*United States* v. *Hanson*, 167 Fed. 881, 883 (C.C.A. 9th, 1909) : *Burley* v. *United States*, 179 Fed. 1 (C.C.A. 9th, 1910)). Since the steam-electric plant will be used to firm up the hydro power of the Central Valley project as a means of making the most effective use of the hydroplants and permitting the sale of the energy which they produce in a manner consonant with the policies of the Congress, construction of the plant clearly would be authorized under the property clause of the Constitution.

I believe that the Central Valley project steamplant presents no considerations differing from those pertinent to the transmission lines involved in the Ashwander case, supra, which were held to be within the constitutional authority of the

United States to acquire. Mr. Chief Justice Hughes, speaking for the Court, stated in part (at 297 U.S. 339):

"The transmission lines which the Authority undertakes to purchase from the power company lead from the Wilson Dam to a large area within about 50 miles of the dam. These lines provide the means of distributing the electric energy, generated at the dam, to a large population. They furnish a method of reaching a market. The alternative method is to sell the surplus energy at the dam, and the market there appears to be limited to one purchaser, the Alabama Power Co., and its affiliated interests. *We know of no constitutional ground upon which the Federal Government can be denied the right to seek a wider market.* We suppose that in the early days of mining in the West, if the Government had undertaken to operate a silver mine on its domain, it could have acquired the mules or horses and equipment to carry its silver to market. And the transmission lines for electric energy are but a facility for conveying to market that particular sort of property, and the acquisition of these lines raises no different constitutional question. * * * *Certainly, the Alabama Power Co. has no constitutional right to insist that it shall be the sole purchaser of the energy generated at the Wilson Dam; that the energy shall be sold to it or go to waste.*" [Italic added.]

The argument of the general counsel for the Pacific Gas & Electric Co., with respect to constitutional authority for the construction of this steamplant, is based on a concession, with respect to a steamplant, made by counsel for the Government in the Ashwander case, supra, commented on by the Court in the following language (at 297 U.S. 340):

"* * * And the Government rightly conceded at the bar, in substance, that it was without constitutional authority to acquire or dispose of such energy except as it comes into being in the operation of works constructed in the exercise of some power delegated to the United States. * * *"

To begin with, the comment is obiter dictum because the acquisition of a steamplant by the Federal Government was not involved in the case. Without exploring the factual context in which the quoted dictum was made or the factual situation to which it is applicable, I point out here that the Central Valley project steamplant would be constructed for works, i.e., the Shasta and Keswick plants, which are clearly the result of an exercise of power delegated to the Federal Government. (I do not understand this to be controverted.) I fail to see, therefore, how the statement fits the situation in the Central Valley project. However, in any event, as pointed out by Mr. Swidler, general counsel for the Tennessee Valley Authority, in his memorandum opinion on the constitutionality of the New Johnsonville steamplant (Congressional Record, February 26, 1948, pp. A1205, A1208):

"* * * In any case constitutional law has undergone tremendous development during the 12 years since the Ashwander case was argued, and nowhere has such development been more rapid or sweeping than in those fields relating to the Government's power to undertake integrated watershed-development programs in the interest of commerce and to deal with its own property. Government activities in these fields once regarded as of doubtful constitutionality have not only been upheld in the courts when tested but have become commonplace. Any opinion expressed a dozen years ago on questions in these fields would need to be reexamined in the light of intervening developments in the law."

In addition to the considerations above mentioned, I believe that the construction of a steamplant as part of the Central Valley project may well be undertaken by the Federal Government under its power to appropriate for the common defense and the general welfare (Constitution, art. I, sec. 8, clause 1). It is an accepted fact that the west coast, and particularly California, is an extremely power-short area. For example, the "brown-out" conditions imposed by the California Public Utilities Commission in the northern and central California area during early 1948, and the daylight time imposed throughout the State for power-saving purposes during that same year, are facts well known throughout the country. Also, it is well recognized that the west coast is a vital defense area. Under the broad authority given the Congress to provide for the common welfare and defense of the Nation, as recognized in such cases as *Steward Machine Co.* v. *Davis* (301 U.S. 548 (1937)); *Helvering* v. *Davis* (301 U.S. 619 (1937)); *Cleveland* v. *United States* (323 U.S. 329 (1945)), and others, I am of the view that the steamplant may be supported under this provision of the Constitution.

Based on the above analysis, I can find no constitutional obstacle to the construction of a steamplant as a part of the Central Valley project.

CLIFFORD E. FIX

Mr. STONG. Mr. Chairman, I suggest that table 25 of the economic analysis which we discussed be put in the record at the point of discussion so that the record will be understandable.

The CHAIRMAN. It may be printed in the record at that point. (See pp. 248–251.)

Mr. STONG. In relation to the last question which involves the Missouri Basin Power Pool, I would suggest that the tentative draft of the power pool arrangement which was supplied to you some time ago at your request, Mr. Chairman, be included in the record in connection with the answer.

The CHAIRMAN. That may be done.

Mr. STONG. My question concerning this is:

In the stated objectives in the proposed power pool agreement, one of the objectives is to make optimum use of hydroelectric power which in that area is almost entirely Federal. Then in schedule (*a*), assessing the cost of maintenance of the pool among the participants, the Government's assessment is reduced because it will not receive many of the benefits of the pool. Is it correct to interpret this as meaning that the seasonal power, the economy power, the nonfirm power, will flow to other generating systems rather than power flowing to the Government to firm up its supplies?

Mr. AANDAHL. I haven't gotten into the proposed pool arrangements in sufficient detail to attempt to answer that question. I can assure you, though, that it will be our purpose to see that the Government's interest and that the Federal power is fully protected in any kind of arrangement that is worked out.

(The draft of the power pool arrangement follows:)

SEPTEMBER 15, 1958.

To Members, Engineering Committee, Eastern Missouri Basin Power Conference.

GENTLEMEN: Transmitted herewith, for your review are copies of draft No. 5 of the Eastern Missouri Basin Power Pool memorandum of understanding and agreement. This draft No. 5 contains the additions and revisions agreed to at the August 19 and 20 meeting of the engineering committee as well as many other changes by the subcommittee to further clarify the agreement.

One month will be allowed for complete review by your organization, including legal review, and preparation of written comments. Comments are desired from all members of the engineering committee and should be mailed to Mr. E. C. Spethmann, recording secretary, 15 South 5th Street, Minneapolis, Minn., to arrive in Minneapolis on or before October 24, 1958. The written comments should include a statement of your opinion as to:

1. Acceptance of the agreement as written.
2. Acceptance of the agreement with specified revisions.
3. Nonacceptance of the agreement.

The subcommittee on pool planning will review and summarize the comments received and will send a summary to each member of the engineering committee. At the time this summary is sent to you a date will be set for the next meeting of the engineering committee. Tuesday, November 18, is being considered as a tentative date for the meeting.

Very truly yours,

GEORGE A. LEWIS,
Chairman, Pool Planning Subcommittee.

EASTERN MISSOURI BASIN

POWER CONFERENCE—PROPOSED

EASTERN MISSOURI BASIN POWER POOL MEMORANDUM OF UNDERSTANDING AND AGREEMENT, DRAFT NO. 5

Prepared by
Pool Planning Subcommittee of Engineering Committee

George A. Lewis (Chairman), U.S. Bureau of Reclamation; C. W. Bicket, U.S. Corps of Engineers; E. C. Lister, Rural Electric Cooperatives; C. W. Minard, Nebraska Public Power Systems; Seth N. Witts, Investor-Owned Power Companies; September 15, 1958.

Eastern Missouri Basin Power Pool Memorandum of Understanding and Agreement

This memorandum of understanding and agreement made this _____ day of _____, 195__, by the owners or operators of electric generating, transmission, or distribution facilities which are signatories hereto, hereinafter called party or parties,

Witnesseth:

0.01 Whereas the parties are the owners or operators of electric generating, transmission, or distribution facilities and are engaged in the business of generating, transmitting, or distributing electric energy to the general public or to other electric distributing agencies; and

0.02. Whereas the operating areas of the parties closely adjoin each other and are wholly or partially within the states of Iowa, Minnesota, Nebraska, North Dakota, and South Dakota, and in the part of the Montana east of Fort Peck, and their systems are already interconnected by transmission lines and are operating in synchronism or are capable of being interconnected; and

0.03. Whereas the parties recognize the many benefits to the parties and their customers which will result by coordinating the installation and operation of generating and transmission facilities of the parties and desire to study continually the benefits that may result to the parties and their customers from such coordination; and

0.04. Whereas the parties, other than agencies of the United States, expect and are expected in general to maintain utility responsibility for their own load: Now, therefore, the parties mutually understand and agree as follows:

ARTICLE I. TERM OF AGREEMENT

1.01. This memorandum of understanding and agreement, hereinafter called pool agreement, shall become effective as to the parties who initially execute the same, on _____ 195__, and, as to any other party on the date such other party, with the approval of the executive committee, subsequently executes the same, and shall continue in effect as to any party until such party terminates its participation in this pool agreement by written notice of 1 year given by such party to all the other parties hereto, on or at any time after January 1, 1964, provided, however, that this pool agreement shall be subject to approval by regulatory authorities or other agencies having jurisdiction.

ARTICLE II. DEFINITIONS

For the purposes of this pool agreement, and of the service schedules which are a part thereof, the following definitions shall apply.

2.01. Maximum demand of a party for any month shall mean that number of kilowatts which is equal to the maximum number of kilowatt-hours required in any clock hour during such month, attributable to energy required by such party during such hour for supply of firm energy to the party's customers including system losses and wheeling losses supplied by such party for transmission of such firm energy.

2.02. Firm sales and firm purchases of a party shall mean sales to, and purchases from, other parties or other electric utilities of one or more of the following:

(*a*) Firm power and energy which is sold or purchased on a load factor basis for a period of 12 months or more.

(*b*) Firm power and energy which is sold or purchased on the basis that it is continuously available for a period of 12 months or more.

(*c*) Peaking power and energy which is sold or purchased for 12 months or more and for which the energy supplied may be returnable in kind at the option of the seller.

(*d*) Seasonal firm power and energy which shall mean power and energy of the types described in (*a*), (*b*), and (*c*), immediately above which is sold or purchased for a period of less than 12 months.

The amount of the firm sales or firm purchases of a party for any month shall be the maximum amount of power in kilowatts which the sellers thereof are contractually obligated to supply to the purchaser thereof during such month, except that the firm purchases of a party will be considered as firm purchases only to the extent that such party's power requirements from other sources during such month could be reduced by the full use of such purchases.

2.03. Peakload responsibility of a party for any month shall mean the maximum amount in kilowatts occurring during any of the 12 consecutive months ending with such month, which amount for any month during such period is equal to—

(*a*) the "maximum demand" of the party for such month, minus

(*b*) the total "firm purchases" of the party for such month, plus

(*c*) the total "firm sales" of the party for such month;

provided however, that if there has been any increase or decrease in the contractual commitments of a party to make "firm sales" or "firm purchases" during such 12-month period, then the amounts used in (*b*) and (*c*) of this paragraph shall be the same as if such increased or decreased commitments had been in effect throughout the 12-month period.

2.04. Generating capability of a party for any month shall mean an amount in kilowatts equal to the total maximum load less station use, that all the generating facilities of such party could normally supply at the time of such party's "maximum demand," under such conditions as may be established by the engineering committee, except that in the case of hydrogenerating facilities of the United States, the capability shall be determined by the agencies of the United States.

2.05. Reserve capacity of a party for any month shall mean the excess in kilowatts of such party's "generating capability" over such party's "peakload responsibility" for such month after reducing such excess by any sales, and increasing such excess by any purchases, of such capacity.

2.06. Incremental cost of a supplying party for operating generating facilities to supply energy for some other party shall be based on the following factors:

(*a*) The incremental cost of the fuel and labor required to generate the energy necessary to supply (i) the scheduled delivery to the receiving party's system, plus (ii) the incremental losses incurred on the supplying party's system, plus (iii) the energy supplied to any intervening wheeling party or parties as compensation for losses.

(*b*) The incremental cost of starting and operating any generating units which must be started as a result of supplying such energy.

(*c*) The incremental cost of maintenance, which shall initially be 0.15 mill per kilowatt-hour for all energy supplied, or such other amount as may be agreed upon by the engineering committee.

The incremental cost per kilowatt-hour for any particular transaction shall be based on the total of such costs divided by the kilowatt-hours delivered to the receiving party, either directly by the supplying party or through an intervening wheeling party.

2.07 Decremental cost of a receiving party for avoiding the operation of generating facilities through the purchase of energy from some other party shall be based on the following factors:

(*a*) The cost of the fuel and labor which such party avoided using by means of such purchase.

(*b*) The decremental cost of avoiding the starting and operating of a generating unit or units.

(*c*) The decremental cost of maintenance, which shall initially be 0.15 mill per kilowatt-hour for all generation avoided, or such other amount as may be agreed upon by the engineering committee.

The decremental cost per kilowatt-hour shall be based on the total of such costs divided by the number of kilowatt-hours delivered to the receiving party, either directly by the supplying party or through an intervening wheeling party.

2.08. Most direct route as used in connection with the wheeling of power and energy, when such power and energy can flow through two or more systems in parallel, shall mean the route through whichever of such systems has the lowest per unit impedance.

ARTICLE III. COOPERATION IN DEVELOPMENT AND OPERATION

3.01. The parties hereto agree to cooperate with each other and to coordinate their planning and operations to the maximum practical extent, in order that they may realize and share in the mutual benefits which can be obtained by joint planning of additional generating and transmission facilities and by coordinated operation of their systems, among such benefits being:

(*a*) A reduction in the total installed generating capacity required to supply the combined loads of the parties;

(*b*) A reduction in the total reserve capacity requirements of the combined systems of the parties through coordination of scheduled maintenance outages;

(*c*) A reduction in the total spinning reserve requirements of the combined systems of the parties;

(*d*) The transfer of surplus capacity from one system to another;

(*e*) Conservation of area resources by maximum utilization of available hydro capacity and energy;

(*f*) Effecting economies in overall production costs through—

(i) the coordination of hydro and thermal generation;

(ii) the production of thermal energy from the most economical sources regardless of ownership; and

(iii) the installation of larger, more efficient generating units.

(*g*) A reduction in the investment required by the parties for additional generating facilities through the installation of larger generating units and through coordinated planning of generating capacity additions as to timing, size, location, and ownership;

(*h*) A reduction in the investment required by the parties for additional transmission facilities through joint planning of such facilities, the avoidance of duplicating facilities, and more effective use of existing facilities;

(*i*) A reduction in the likelihood of curtailment or interruption of electric service;

(*j*) The provision of means for serving abnormal or special types of loads such as may be created by a national emergency; and

(*k*) Intangible benefits derived through the system organizations of the parties becoming better acquainted and cooperating in solving mutual problems.

ARTICLE IV. RELATION TO OTHER AGREEMENTS

4.01 It is the intent of the parties that:

(*a*) This pool agreement shall not affect or supersede in any manner the provisions of any existing interconnection or interchange agreements between any two or more of the parties hereto unless mutually agreed to by the parties concerned, and

(*b*) If any of the provisions of any existing interconnection agreements between any two or more of the parties hereto are in conflict with or tend to obstruct the objectives hereof, the parties thereto shall endeavor to amend such agreements so that they will conform with the objectives hereof, and

(*c*) Any new interconnection or interchange agreements which may be entered into between any two or more of the parties shall be made to conform with the objectives hereof.

4.02. It is also the intent hereof that when two or more parties join in constructing generating facilities for their mutual benefit, the parties concerned shall enter into a separate agreement covering the construction, operation, and maintenance of such facilities and the method by which such parties shall share in the use and costs of such facilities.

4.03. It is also the intent hereof that when two or more parties construct a new interconnection between their separate systems or jointly construct a transmission line, the parties concerned shall enter into a separate agreement covering construction, operation and maintenance of such interconnection or transmission line, and the obligations of such parties with reference thereto.

4.04. It is recognized that there are in existence power pool agreements between some of the parties hereto, and it is the intent hereof that such power pool agreements shall remain in effect as long as the parties thereto so desire, and that similar power pool agreements by other parties hereto are encouraged, provided that such agreements conform with the objectives hereof.

4.05. It is the intent hereof that the applicable service schedules currently in effect hereunder shall be used by the parties hereto for power and energy or reserve capacity transactions, except, that when the purchaser and the seller thereof currently have in effect a separate agreement covering such a transaction, such service schedules shall not be applicable.

ARTICLE V. ADMINISTRATION AND COMMITTEE ORGANIZATION

5.01. The cordination of all power pool operations and power pool activities of the parties shall be carried on by and under the direction of an executive committee and an engineering committee, together with a power pool staff (hereinafter referred to as "staff").

5.02. Inasmuch as there is a very wide range in the system loads of the parties, and inasmuch as the participation in power pool activities and in the distribution of the costs of maintaining the staff should be, as nearly as practicable, proportional to the benefits to be derived, provisions are made herein for two groups of parties; namely,

(*a*) Group I parties who shall consist of the following:

(*i*) All parties owning, or operating under lease, generating facilities having a generating capability of 25,000 kilowatts or more,

(*ii*) All parties owning or operating 100 miles or more of transmission line having a voltage of 100,000 volts or more, and

(*iii*) Any other parties who desire to be represented on subcommittees of the engineering committee, which are concerned with operating matters or parties who desire to participate in economy energy transactions pursuant to this pool agreement, in which event, such parties shall share in the expenditures of the staff as group I parties.

(*b*) Group II parties who shall consist of all other parties signatory hereto.

5.03. The executive committee shall consist of a management representative of each of the parties, designated by each party as its authorized representative on such committee, together with the following nonvoting members:

(*a*) A representative of the Federal Power Commission,

(*b*) A representative of the Rural Electrification Administration, and

(*c*) One representative from each of the State municipal electric utility associations in the States of Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

5.04. The engineering committee shall consist of a representative designated by each of the parties as its authorized representative on such committee. Each party shall also designate an alternate who, in the absence of the representative, may act in place of the representative.

5.05. Each party shall evidence appointments to the executive committee and engineering committee by written notice to the other parties and by similar notice any party may at any time change its representatives or alternate on such committees.

5.06. Each member of the above committees shall have the option of inviting other members of his organization or others, as his advisers, to attend meetings of the committee of which he is a member.

5.07. The expenses of each member of the above committees shall be borne by the party he represents.

5.08. Each of the above committees shall elect annually its own chairman and such other officers as it desires.

5.09. Minutes of all committee meetings shall be recorded and copies thereof furnished to each member of such committee.

ARTICLE VI. EXECUTIVE COMMITTEE

6.01. The executive committee shall establish the basic principles and policies governing the coordination of the activities of the parties pursuant to this pool agreement.

6.02. The duties of the executive committee shall include the following:

(*a*) Review and approve the annual budget for the operation of the staff and expenses incidental thereto and, except as otherwise provided in service schedule A, establish each party's allocated share of the approved expenditures of the staff.

(*b*) Review and act upon changes in the basic principles and policies which, from time to time, may become desirable.

(*c*) Review and recommend to the parties, amendments to this pool agreement, including revisions of the service schedule, which may be desirable to facilitate the attainment of the objectives hereof.

(*d*) Specify the duties and authority of the engineering committee other than those duties specified in article VII.

(*e*) Review and act upon applications of electric utilities not signatory hereto, to become parties to this pool agreement.

(*f*) Make such arrangements as may be required pertaining to matters which are pertinent to this pool agreement but which are not specifically covered herein.

6.03. The executive committee shall meet at least annually and at other times upon call of the chairman or upon call of at least five of the committee members. A quorum of the executive committee shall consist of a majority of the committee members and final decisions of the executive committee shall require an affirmative vote of a majority of the committee members present, except that a final decision, on any matter affecting the expenditures of the staff, shall require an affirmative vote of a majority of all of the committee members representing group I parties.

6.04. Even party shall be bound by the decisions of the executive committee relating to the expenditures of the staff, except that any payments pursuant to service schedule A by agencies of the United States, shall be contingent upon appropriations by the Congress. Each party shall cooperate in the execution of all other decisions of the executive committee unless in the judgment of such party, such decisions are contrary to its best interest.

ARTICLE VII. ENGINEERING COMMITTEE

7.01. The engineering committee shall establish such policies, rules, and procedures as may be required to coordinate the operations and planning of the systems of the parties, pursuant to this pool agreement.

7.02. The duties of the engineering committee shall include the following:

(*a*) Establish a power pool staff, select and arrange for the employment of the executive director of such staff, specify the duties and authority of the executive director and his staff, other than those duties specified in article VIII.

(*b*) Review the annual budget of the staff and submit the budget to the executive committee for approval.

(*c*) Exercise general supervision and guidance over the staff and direct the staff to collect statistical data and other information which would be of assistance to the engineering committee and direct the staff to make studies of matters pertinent to this pool agreement.

(*d*) The representative of each party on the engineering committee shall supply to the staff at least 1 month in advance of each regularly scheduled semiannual meeting of the engineering committee, a monthly load and capability forecast for such party's system in such form as the engineering committee may specify, for a period of at least 36 months in advance or for such other period in advance as the engineering committee may designate.

(*e*) Coordinate the maintenance schedules of the parties so as to maintain at all times an adequate amount of operable reserve capacity on the combined systems of the parties.

(*f*) Review and coordinate plans of the parties for the construction of generating and transmission facilities.

(*g*) Coordinate or arrange for conducting such transmission network studies of such systems of the parties as may be required to aid in performing its duties hereunder. The cost of conducting such studies shall be shared, in the manner mutually agreed to, by the parties participating therein.

(*h*) Perform such other duties as may be required of it by the executive committee.

7.03. In the event that from time to time power and energy to advantage may be interchanged or sold between any two parties hereof upon bases not provided for in the service schedules currently in effect, or in other agreements between the parties concerned, and in circumstances such that arrangements must be made promptly in order to realize such advantage, or in case of emergency, temporary arrangements for individual transactions may be made by the members of the engineering committee representing the parties concerned, including the representative of any party involved in wheeling such power and energy.

7.04. Since the responsibilities of the engineering committee cover many and diverse operating and planning matters and since the area served by the parties is quite extensive, the chairman of the committee may appoint subcommittees to study and make recommendations on a particular matter or group of related matters or to study the basic planning requirements of a particular area. The membership of such subcommittees may include others than members of the engineering committee except that membership of subcommittees concerned principally or wholly with operating matters shall be limited to representatives of group I parties and the membership of subcommittees concerned principally or wholly with the planning of additional generating and transmission facilities shall include representatives of all parties who desire to participate on such a subcommittee. The recommendations of all such subcommittees shall be coordinated and reviewed by the engineering committee before being submitted to the parties involved.

7.05 The engineering committee shall hold regularly scheduled meetings at least twice annually following the summer and winter peakload periods of the parties and at other times upon call of the chairman or upon call of at least five of the committee members.

7.06. The representatives of the parties constituting the engineering committee shall be of equal authority, and all decisions made or directions given to the parties regarding operation of the systems of the parties must be based on a unanimous agreement of the members of the committee present. Decisions made which affect the organization or duties of the staff shall require the approval of all members present except that any decisions made which increase or decrease the expenditures of the staff shall require the approval of the representatives of all group I parties on such committee. Recommendations to the parties regarding the construction of additional generating and transmission facilities shall require the approval of a majority of the members of the committee.

ARTICLE VIII. POWER POOL STAFF

8.01. The staff shall be headed by an executive director who shall select and arrange for the employment of such technical and clerical forces, engage such office space, and incur such expenses on behalf of and by such staff as shall meet with the approval of the engineering committee.

8.02. The duties of the staff shall include the following:

(*a*) The executive director, or a member of the staff designated by him, shall act as secretary of the executive committee and the engineering committee, and shall prepare written minutes of all actions taken and decisions made by such committees.

(*b*) Coordinate and consolidate the monthly load and capability forecasts supplied by the parties.

(*c*) Consolidate the maintenance schedules of the parties for coordination by the engineering committee.

(d) Obtain, combine, and analyze such operating data of the parties and of such other interconnected systems as the engineering committee may direct, and submit monthly and annual reports in the form specified by the engineering committee.

(*e*) Obtain from each party heat rate and fuel cost data for the thermal generating units on each party's system and tabulate and report such information periodically as directed by the engineering committee.

(*f*) Study and recommend to the engineering committee changes in the methods of operation by which greater economies may be effected.

(*g*) Provide such technical, accounting, and engineering services as may be required by the operations of the parties hereunder.

(*h*) Perform such other duties as may be assigned by the engineering committee.

8.03. The executive director shall prepare an annual budget of expenditures for the staff and submit it prior to January 1 of each year to the engineering committee for review, which when approved by the executive committee shall constitute the authority for the staff's expenditures for the ensuing year, except as the same may be modified during each year by appropriate action of the executive committee.

8.04. The approved expenditures of the staff shall be apportioned for payment by each of the parties as provided in service schedule A.

ARTICLE IX. INSTALLATION OF ADDITIONAL GENERATING FACILITIES

9.01. In the coordination of the planning of the parties it is the intent that the thermal generating units installed by any party hereafter should be the largest, most economical size practicable, taking into consideration the loads of the parties which are within economical transmission distance of its proposed location, the anticipated growth of such loads, the transmission facilities required to transmit the output thereof to such loads, or to supply such loads when the unit is not in service, and the ability of the system of the parties and their interconnections with other interconnected systems to withstand the instantaneous loss of such unit without causing unstable operation.

9.02 Whenever the engineering committee recommends that a party install a generating unit which is larger than needed by such party's system alone, such party, together with the parties with which such party is directly interconnected, and other neighboring parties, who expect to be deficient in generating capacity, may enter into separate agreements for the sharing of the capability, use, annual costs, and benefits of such unit.

9.03. It is the intent of the parties that, in general, neither of the following groups of parties shall install an undue proportion of the additional thermal generating capacity required by the parties:

(*a*) Investor owned parties.

(*b*) Noninvestor owned parties other than the United States.

ARTICLE X. MAINTENANCE OF ADEQUATE GENERATING CAPABILITY

10.01. Each party shall maintain at all times generating capability in an amount which shall be equal to or greater than its peak load responsibility and shall also maintain at all times either from its own generating capability or by purchase, or both, reserve capacity in an amount which shall be equal to or greater than such party's reserve capacity obligation.

10.02. The "reserve capacity obligation" of a party having 25,000 kilowatts or more of generating capability shall for any month be equal to a percentage, hereinafter designated, of the peak load responsibility of such party. Such percentage shall initially be 12 percent, except that if such party's generation is wholly or largely hydro, such percentage shall initially be 10 percent, and such percentages shall be subject to change from time to time by the engineering committee. In the event the total reserve capacity of all parties is less than the total reserve capacity obligation of all parties, the engineering committee shall temporarily reduce such percentages so that the total reserve capacity obligations of all parties will then be equal to or less than the total reserve capacity of all parties.

10.03 The "reserve capacity obligation" of a party having less than 25,000 kilowatts of generating capability for any month shall be equal to or greater than 50 percent of the capability of its largest generating unit, or 100 percent of its peak load responsibility, whichever is the lesser, but in no event less than 12 percent of its peak load responsibility.

10.04. Only generating capacity which is connected to the interconnected systems of the parties hereto in a manner such that it is available for use by other parties hereto shall be included in the reserve capacity of a party.

10.05. In the event the load and capability forecast of a party indicates that during some month such party will not have adequate generating capability to meet its reserve capacity obligation, such party, at least 1 year preceding such month shall make arrangements for firm purchases or purchases of reserve capacity, or both, in such an amount that it will then have sufficient capacity to meet its reserve capacity obligation. In the event a party's actual maximum demand during the current month is greater than its previously estimated maximum demand for such month and such party is unable to meet its reserve capacity obligation, such party shall immediately make arrangements for firm purchase

or purchases of reserve capacity in such an amount that it will then have sufficient capacity to meet its reserve capacity obligation.

10.06. In the event the load and capability forecast of a party indicates that, during a certain month, such party will experience a deficiency in generating capability which is so great that its generating capability is less than its peak-load responsibility, such party, at least 1 year preceding such month shall make arrangements for firm purchases beginning with, or prior to such month, in an amount such that its generating capability will then exceed its peak-load responsibility. Should such party fail to make such firm purchases within the time herein specified, the executive committee shall, prior to the time such party needs such firm purchase, designate the party or parties from whom firm power and energy shall be purchased by such party. The selling party or parties so designated by the executive committee normally shall be a party or parties with whom such purchasing party is directly interconnected, and such purchasing party shall pay the selling party or parties so designated each month for the power and energy purchased during such month, an amount which, unless otherwise determined by the executive committee, shall be equal to:

$3 per kilowatt per month, plus an energy charge of whichever is the greater.

(*a*) 5 mills per kilowatt-hour, or

(*b*) 120 percent of the incremental cost of producing such energy,

and shall continue to pay such amounts until the effective date of any agreement such purchasing party may thereafter enter into covering the firm purchases such party needs to make its generating capability exceed its peak-load responsibility. In the event a party's actual maximum demand exceeds its estimated maximum demand during the current month by such an amount that such party then needs additional amounts of firm purchases, such party shall immediately increase its firm purchases to an adequate amount, or if it fails to do so it shall purchase such additional amounts from a party or parties designated by the executive committee at the rates specified in this paragraph.

ARTICLE XI. SERVICE CONDITIONS

11.01. The systems of the parties shall be operated interconnected continuously under normal system conditions, and the parties shall cooperate in keeping the frequency of the interconnected systems of the parties at 60 cycles as closely as is practicable, in keeping the interchange of power and energy between the systems of the parties as closely as practicable to the scheduled amounts, and in maintaining mutually satisfactory voltage levels. Each party shall be responsible for the reactive volt-ampere requirements of its system but reactive volt-amperes may be interchanged between systems from time to time, subject to agreement between the parties involved, when benefit to one system may be gained thereby without causing hardship to another system.

11.02. The systems of the parties shall normally be so maintained and operated as to minimize, in accordance with good practice, the likelihood of a disturbance originating in the system of one party causing impairment to the service of the system of any other party or of any other system with which the systems of the parties are interconnected.

11.03. It is recognized that unintentional interchange of power and energy between interconnected systems will occur because of the impossibility of continuously controlling generation to exactly equal the load within a given control area. It also is recognized that due to the manner in which the systems of the parties are interconnected with each other and with other systems, a portion of the power and energy scheduled for delivery between any two of such interconnected systems may not flow directly from the supplier thereof to the receiver thereof over the intended route through the transmission systems of the parties but may result in inadvertent flows through other systems. Therefore, because of these conditions,

(*a*) All intentional power and energy deliveries between the system of a party in one load-control area and the system of a party in a different load-control area shall be scheduled in advance.

(*b*) It shall be the responsibility of each party to maintain the net power and energy flowing into and out of its system or load-control area during each hour so that such deliveries are, as near as is practicable, equal to the net scheduled amount, and the difference between the net scheduled deliveries and the actual net deliveries shall be balanced out in kind in

accordance with principles and practices established by the engineering committee.

(c) When there is a scheduled power and energy delivery by one party to some other party, and a portion thereof actually flows through other systems which are not a part of the most direct route, the portion of the power and energy flowing through such other systems, will be considered as having been delivered by the scheduled supplier thereof by the most direct route, except that the amount scheduled over the most direct route plus the normal loads on the facilities constituting such route shall not exceed the capacity of such facilities.

(d) It is recognized that an increase or decrease may occur in the losses in a party's system as a result of inadvertent flows through its system caused by scheduled interchange of power and energy between two other systems when such party is neither a party to the transaction nor a wheeling party and that such inadvertent flows will result in minimizing the overall losses in the interconnected systems due to such transaction. Therefore, due to the mutual benefits obtained by such interchange transactions, each party agrees to absorb any additional losses which may occur in its system due to such inadvertent power and energy flows, provided, however that in cases where such inadvertent flows result in a serious reduction in transmission capacity available to the party experiencing such inadvertent flows or results in continual excessive losses, the matter shall be referred to the engineering committee for appropriate action.

11.04. The parties agree to maintain at all times an adequate spinning reserve, and to share in providing such reserve in accordance with the provisions of service scheduled D.

ARTICLE XII. SERVICES TO BE RENDERED

12.01. Inasmuch as the various specific services to be rendered in furtherance of the purposes of this pool agreement will vary during the term hereof, and the provisions, arrangements, and rates applicable to such services must necessarily depend upon the conditions from time to time existing, such specific provisions, arrangements, and the rates applicable thereto will be set forth in service schedules from time to time formulated between the parties, which service schedules, when executed by the parties, and approved by regulatory authorities having jurisdiction, shall become parts of this pool agreement during the terms fixed by their respective provisions. The initial service schedules which are executed contemporaneously herewith shall be in force and effect in accordance with their terms, until superseded by subsequent service schedules.

12.02. Service schedules initially provided under this pool agreement are service schedules A through G, as follows:

A. Expenditures of power pool staff.
B. Emergency and scheduled outage interchange service.
C. Reserve capacity interchange service.
D. Spinning reserve interchange service.
E. Economy energy interchange service.
F. Seasonal firm power interchange service.
G. Wheeling services and losses.

ARTICLE XIII. METERING

13.01. All metering equipment required for recording the deliveries of power and energy between the system of each party and the systems of the other parties with which it is interconnected shall be maintained by the parties owning such metering equipment, in accordance with good practice.

13.02. Should any such metering equipment at any time fail to register, or should the registration thereof be so erratic as to be meaningless, the power and energy delivered shall be determined by the engineering committee representatives of all the parties who are concerned from the best information available.

ARTICLE XIV. RECORDS

14.01. In addition to meter records, the parties shall keep such log sheets and other records as, in the opinion of the engineering committee, may be needed to afford a clear history of the various movements of power and energy between

the systems of the parties involved both in transactions hereunder and in transactions between parties hereto under other agreements between such parties, and to effect such differentiation as may be needed in connection with settlements in respect to such transactions. The originals of all such meter records and other records shall be open to inspection by representatives of the parties concerned and by the engineering committee.

14.02. Each party shall furnish to the staff appropriate data from meter registrations and from other sources on such time bases as are established by the engineering committee when such data are needed for settlements, special tests, operating records, or for other purposes consistent with the objectives hereof. As promptly as practicable after the end of each month, each party shall render to the other parties concerned, statements setting forth appropriate data from meter registrations and other sources in such detail and with such segregation as may be needed for operating records and for settlements hereunder.

ARTICLE XV. BILLINGS AND PAYMENTS

15.01. For billing purposes, the amount of energy delivered pursuant to this pool agreement by a supplying party to a receiving party, or delivered to the receiving party through an intervening wheeling party during any period, shall be the amount scheduled in advance for delivery at a point or points where the system of the receiving party connects with the system of the supplying party or with the system of the wheeling party, except, that if both the supplying party and the receiving party are in the same load control area, actual metered quantities of energy delivered may be used.

15.02. Billing for any capacity transaction pursuant to this pool agreement, including any wheeling charges pertaining to such transaction, shall be based upon the amount of such capacity committed in advance for delivery at a point or points where the system of the receiving party connects with either the system of the supplying party or with the system of the wheeling party.

15.03. All bills for power and energy delivered pursuant to this pool agreement shall be rendered monthly, not later than 15 days after the end of the period to which such bills are applicable. Unless otherwise agreed upon by the engineering committee, such periods shall be from 12:01 a.m. of the first day of one month to 12:01 a.m. of the first day of the succeeding month. Bills shall be due and payable within 15 days from the date such bills are rendered and payment shall be made when due and without deduction. Interest on any unpaid amount from the date due until the date upon which payment is made shall accrue at the rate of one-half percent per month.

15.04. All bills pertaining to economy energy transactions involving a wheeling party or parties shall be rendered monthly in a manner to be determined by the engineering committee.

15.05. In the event a party desires to dispute all or any part of the charges submitted by some other party, it shall nevertheless pay the full amount of the charges when due and give notification in writing within 60 days from the date of the statement, stating the grounds on which the charges are disputed, and the amount in dispute; provided, however, no dispute as to the accuracy of the charges will be entertained or considered unless written complaint with respect thereto is submitted by the complaining party to the party making such charges within 60 days from the date upon which the statement for charges is presented; and the complaining party will not be entitled to any adjustment on account of any disputed charges which are not brought to the attention of the party making such charges, within the time and in the manner herein specified.

ARTICLE XVI. UNCONTROLLABLE FORCES

16.01. A party hereto shall not be considered to be in default in respect of any obligation hereunder if prevented from fulfilling such obligation by reason of uncontrollable forces. The term "uncontrollable forces" shall be deemed for the purposes hereof to mean storm, flood, lightning, earthquake, fire, explosion, failure of facilities not due to lack of proper care or maintenance, civil disturbance, labor disturbance, sabotage, war, national emergency, restraint by court or public authority, or other causes beyond the control of the party affected, which such party could not reasonably have been expected to avoid by exercise of due diligence and foresight and by provision of reserve facilities in accordance with good practice. Any party unable to fulfill any obligation by reason

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of uncontrollable forces will exercise due diligence to remove such disability with reasonable dispatch.

ARTICLE XVII. WAIVERS

17.01. Any waiver at any time by any party of its rights with respect to a default under this pool agreement, or with respect to any other matter arising in connection with this pool agreement, shall not be deemed a waiver with respect to any subsequent default or matter. Any delay short of the statutory period of limitation in asserting or enforcing any right shall not be deemed a waiver of such right.

ARTICLE XVIII. NOTICES

18.01. Any formal notice, demand, or request required or authorized by this pool agreement shall be deemed properly given if mailed, postage prepaid, to the officer signing this pool agreement for the party concerned, at the address shown on the signature pages hereof. The designation of the person to be notified or the address of such person may be changed at any time by similar notice.

18.02. Any notice or request of a routine character in connection with delivery of power or energy or in connection with operation of facilities, shall be given in such manner as the engineering committee from time to time shall arrange.

ARTICLE XIX. SUCCESSORS AND ASSIGNS

19.01. No party hereto can assign this pool agreement without the consent, in writing, of the other parties hereto, except in connection with the sale of a substantial portion of its properties including its high voltage transmission facilities.

19.02. The several provisions of this pool agreement are not intended to and shall not create rights of any character whatsoever in favor of any persons, corporations, or associations other than the parties to this pool agreement, and the obligations herein assumed are solely for the use and benefit of the parties to this pool agreement.

In Witness Whereof the parties hereto have caused this memorandum of understanding and agreement to be executed and attested by their duly authorized officers as the day and year first written above.

Attest:	_____
By _____	By _____
Title _____	Title _____
	Address _____
	_____
Attest:	_____
By _____	By _____
Title _____	Title _____
	Address _____

SERVICE SCHEDULES

SERVICE SCHEDULE A. EXPENDITURES OF POWER POOL STAFF

This service schedule A is agreed to on this ____ day of _____, 195__, to be effective under and as a part of the eastern Missouri Basin power pool memorandum of understanding and agreement (hereinafter called pool agreement), dated _____.

Section 1. Term of schedule

1.01. This schedule shall become effective upon the date hereof or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering expenditures of the power pool staff (hereinafter called staff).

Section 2. Apportionment of expenditures of staff

2.01. The expenditures of the staff, as approved by the executive committee, other than special expenditures as specified in section 5 hereof, shall be apportioned for payment by each of the parties as follows:

(*a*) Each party shall pay $600 per year; and

(*b*) Each group II party operating generating facilities shall pay an additional $400 per year; and

(*c*) The remaining expenditures shall be apportioned for payment by the group I parties in the Proportion which each party's "proration number" bears to the sum of the "proration numbers" of all group I parties, where the "proration number" of a party for any calendar year shall be equal to:

(*i*) One-hundred percent of the first 100,000 kilowatts of generating capability of the party for December of the preceding calendar year, plus

(ii) Seventy percent of the next 400,000 kilowatts of generating capability of the party for December of the preceding calendar year, plus

(iii) Fifty percent of the party's remaining generating capability for December of the preceding calendar year;

provided that the United States, as represented by the U.S. Corps of Engineers and the U.S. Bureau of Reclamation, shall be considered as one group I party for the purposes of this section only, and since many of the benefits to the other parties hereto do not accrue to the United States, the "proration number" of the United States shall be based on one-third of its generating capability located within the power pool area, and these two agencies of the United States shall share equally in paying their combined portion of the expenditures of the staff.

(*d*) A group I party shall pay a total of not less than $1,400 per year.

Section 3. Operating fund of staff

3.01. Upon approval by the executive committee of the first annual budget of the staff, each party, other than agencies of the United States, shall advance to the staff an amount equal to 50 percent of its apportionment of the budgeted expenditures of the staff for such year. The amounts so advanced shall constitute an operating fund for the staff.

3.02. In the event that from time to time it is found that the operating fund of the staff is inadequate to meet the expenditures of the staff as they become due, the executive committee may require each party, other than agencies of the United States, to advance additional amounts to such operating fund.

3.03. All amounts so advanced by each party to the operating fund of the staff shall remain the property of such party and shall be returned to such party upon the termination of the pool agreement, or upon such party's termination of its participation in such pool agreement, provided such party has paid in full its apportionment of the actual expenditures of the staff for the full period of its participation in this pool agreement.

Section 4. Payment of apportionment of expenditures of staff

4.01. The executive director shall, beginning with the calendar quarter in which the pool agreement becomes effective, and quarterly thereafter, provide each of the parties thereto with a statement of the expenditures of the staff for the quarter just expired, by the 20th day of the succeeding calendar month, together with an allocation of the total expenditures on the basis of each party's apportionment as specified in this schedule. Each party will thereafter by the first of the month following receipt of such statement reimburse the staff for such party's allocated share of such expenditures.

Section 5. Special expenditures

5.01. In the event the engineering committee, with the approval of the executive committee, finds it desirable to provide special facilities, such as communication or telemetering facilities, to promote the objectives hereof, and the annual costs thereof should be shared by some or all of the parties in a manner which differs from that provided in section 2 of this schedule, the engineering committee shall determine which party or parties should own or lease such facilities and each party's share of the annual costs thereof. If the engineering committee so directs, such annual costs may be billed to the staff, and by the staff to each of the parties as a special expenditure.

Section 6. Staff expenditures

6.01. The operating fund of the staff may be disbursed for salaries, communication, office rental and expenses including expendible items of property, and for other related expenses. It is the intent of the parties hereto that each individual member of the staff shall be on or be placed on the payroll of one of the parties hereto with periodic reimbursement by the staff to the party or

parties for the services so rendered. It is also the intent hereof that all nonexpendable property used in connection with staff operations shall be owned by one or more parties hereto, and furnished for the use of the staff on a rental or lease basis.

Attest:	
By_____	By_____
Title_____	Title_____
Attest:	
By_____	By_____
Title_____	Title_____

SERVICE SCHEDULE B—EMERGENCY AND SCHEDULED OUTAGE ENERGY INTERCHANGE SERVICE

This service schedule B is agreed to on this ____ day of _____, 195__, to be effective under and as a part of the eastern Missouri Basin power pool memorandum of understanding and agreement (hereinafter called pool agreement), dated _____.

Section 1. Term of schedule

1.01. This schedule shall become effective upon the date hereof, or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering purchase and sale of emergency and scheduled outage energy.

Section 2. Service to be provided

2.01. This schedule provides for the supply of energy by any one party to any other party during emergency or scheduled outages of generating or transmission facilities or both.

2.02. For the purposes hereof, a scheduled outage shall mean any outage prescheduled by a party with the approval of the engineering committee or any other outage requiring generating assistance of another party hereto except the first 24 hours of an emergency outage.

2.03. Emergency energy and scheduled outage energy shall mean energy required by a party as a result of emergency or scheduled outages of generating or transmission facilities, which energy is in excess of energy entitlements in connection with purchases of reserve capacity.

Section 3. Obligations of the parties

3.01. Any party, upon request by any other party, shall supply to such other party emergency or scheduled outage power and energy up to the full amount of the operable generating capacity available to its system through its own generating facilities and its firm power purchases from others, which at the time is not being used to supply the requirements of its customers, including firm obligations to other parties or to other electric utilities, or to supply emergency or scheduled outage power and energy to others: *Provided*, That the delivery thereof will not, in the sole judgment of the supplying party, endanger its facilities or interfere with its obligations to its customers or to other parties or to other electric utilities with which it is interconnected, and in the case of the Federal hydrogenerating facilities, is not incompatible with other water regulating requirements on the Missouri River.

3.02. Any party, if requested to do so by any other party, shall endeavor to procure through its interconnection with other electric utilities not signatory hereto, additional emergency or scheduled outage service which may be available under agreements covering such interconnections from a source or sources which will result in the lowest cost to the receiving party and shall arrange for the delivery of such emergency or scheduled outage energy to such receiving party: *Provided*, That the delivery thereof can be made, in the sole judgment of the party procuring such service, without endangering its facilities or jeopardizing service to its customers.

3.03. Any party whose transmission facilities are required to wheel emergency or scheduled outage energy from the supplying party to the receiving party shall transmit such energy up to such amounts as will not, in the sole judgment of the wheeling party, endanger its facilities or interfere with its obligations to its customers, other parties, or other electric utilities.

Section 4. Scheduling of deliveries

4.01. Deliveries of emergency energy shall be scheduled as soon as possible after the occurrence of such emergency in accordance with principles and practices established by the engineering committee.

4.02. The schedule of deliveries of power and energy under this schedule may be decreased at any time upon reasonable notice to the supplier and any intervening wheeling party or parties or may be increased provided the increased amount does not exceed, in the supplier's judgment, and in the judgment of any wheeling party or parties concerned, its ability to supply or transmit such energy.

Section 5. Schedule of rates

5.01. The receiving party shall pay to the supplying party for emergency energy and for scheduled outage energy furnished under this schedule from the supplier's generating facilities, an amount of whichever is the greatest:

(*a*) Six mills per kilowatt-hour; or

(*b*) 120 percent of the incremental cost of producing such energy where the said incremental cost shall be computed in accordance with provisions of article II of the pool agreement; or

(*c*) 120 percent of the average cost to the purchasing party had it produced such energy with the generating unit which is out of service, which average cost shall include but not be limited to the following:

(*i*) fuel costs saved

(*ii*) operation costs saved

(*iii*) maintenance cost of 0.15 mill per kilowatt-hour;

Provided, however, That the supplier of such emergency or scheduled outage energy may, at its option, require the purchaser thereof to return such energy in kind, or under conditions mutually agreeable to both parties, in lieu of having the purchaser thereof pay the amounts specified herein.

5.02. In the event emergency or scheduled outage energy must be supplied through the system of an intervening party or parties, the provisions of service schedule G shall apply.

5.03. For any energy which the supplying party is called upon to procure from electric utilities not signatory hereto for delivery to the receiving party, the receiving party shall pay to the supplying party 110 percent of the cost of procuring such energy; but not less than the rates specified herein, in addition to wheeling and loss compensation as set forth in service schedule G.

SERVICE SCHEDULE C. RESERVE CAPACITY INTERCHANGE SERVICE

This service schedule C is agreed to on this ---------- day of ----------, 195--, to be effective under and as a part of the Eastern Missouri Basin Power Pool memorandum of understanding and agreement (hereafter called "pool agreement"), dated ----------.

Section 1. Term of schedule

1.01. This schedule shall become effective upon the date hereof, or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering purchase and sale of reserve capacity.

Section 2. Service to be provided

2.01. This schedule provides for the sale of reserve capacity, and any energy associated therewith, by any party to any other party so that the purchasing party can meet its reserve capacity obligation as defined in article X of the pool agreement.

Section 3. Conditions of service

3.01. In the event a party is obligated to purchase reserve capacity pursuant to the provisions of article X of the pool agreement, such party shall purchase such capacity as it may need from some other party or parties, or other electric utilities whose system adjoins or is near its system, and who will have surplus capacity available for sale as reserve capacity. Such capacity shall be purchased from a party or parties whose systems are connected to its systems through transmission facilities which have adequate capability for transmitting such capacity.

3.02. In the event a party purchasing reserve capacity from some other party hereunder has a loss of generating or transmission capacity, such party shall be entitled to purchase, from the seller of such capacity, energy associated therewith, provided that the scheduled rate of delivery thereof shall not exceed the number of kilowatts of such capacity purchased.

3.03. Purchases of reserve capacity hereunder shall be on a 12-month basis or longer, provided, however, that the purchasing and selling party may mutually agree to shorter periods.

3.04. When wheeling over an intervening party's system is required, arrangements shall be made for such wheeling at the same time and for the same time period as the purchase of reserve capacity.

Section 4. Scheduling of deliveries

4.01. When energy deliveries are required under this schedule, the purchasing party shall advise the selling party as far in advance as practicable, in order that the supplying party may have adequate generating capacity available. During emergencies on the purchasing party's system, the selling party shall immediately make available all spinning reserve capacity on its system and shall supply additional power and energy from other sources as required, up to the full amount of its obligation to furnish power and energy under this schedule.

Section 5. Schedule of rates

5.01. A party purchasing reserve capacity under this schedule shall pay the selling party each month an amount which shall be equal to the sum of the following:

(*a*) $1.50 per kilowatt of reserve capacity currently being purchased, plus

(*b*) Five mills per kilowatt-hour, but not less than 120 percent of the incremental cost of producing any energy associated with such reserve capacity, where incremental cost shall be computed in accordance with provisions of article II of the pool agreement: *Provided, however,* That the selling party may, at its option, require the purchasing party to return such energy in kind, or under conditions mutually agreeable to both parties, in lieu of having the purchasing party pay the amount specified in this subparagraph (b).

5.02. In the event the facilities of an intervening wheeling party or parties are required in connection with reserve capacity and energy associated therewith under this schedule, the provisions of service schedule G shall apply.

SERVICE SCHEDULE D. SPINNING RESERVE INTERCHANGE SERVICE

This service schedule D is agreed to on this _____ day of _____, 195__, to be effective under and as a part of the Eastern Missouri Basin Power Pool memorandum of understanding and agreement (hereinafter called "pool agreement"), dated _____.

Section 1. Term of schedule

1.01. This schedule shall become effective upon the date hereof, or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering purchase and sale of spinning reserve.

Section 2. Service to be provided

2.01. A party may arrange for some other party to supply part or all of its spinning reserve obligation as hereinafter provided.

Section 3. Obligations of the parties

3.01. The total amount of spinning reserve to be operated during any hour by all of the parties to the pool agreement, shall be such percentage of the combined load of all parties for such hour as may be established from time to time by the engineering committee, but at all times shall be greater than the largest load being carried by any one generating unit in operation on the interconnected systems of the parties. Each party's spinning reserve obligation during any hour shall be equal to the percentage so established by the engineering committee (expressed as a decimal) multiplied by that portion of such party's generation and purchases of power and energy, other than firm purchases, which are attributable to supplying its customers and its firm sales to others during such hour.

3.02. To assure that there will be an adequate amount of spinning reserve on the systems of the parties at all times, for the purposes of this schedule, the engineering committee shall subdivide the parties into contiguous subgroups such as an Iowa subgroup, a Minnesota subgroup, a Nebraska subgroup, and a Dakota subgroup, and designate the load dispatcher of one party in each subgroup as the spinning reserve coordinator for such subgroup.

3.03. To the extent designated by the engineering committee, each party in such a subgroup of parties shall, not less than one day in advance, advise the spinning reserve coordinator of its subgroup of the amount of spinning reserve which it will have or has on its system each day, and except as otherwise provided herein, each party shall maintain each hour, unloaded capacity synchronized with the interconnected systems of the parties, equal to such party's spinning reserve obligation.

3.04. A party receiving emergency energy, scheduled outage energy, economy energy, or energy associated with reserve capacity shall normally maintain its spinning reserve obligation from its own generation, except as provided in section 2 of this schedule.

Section 4. Schedule of rates

4.01. Except as otherwise agreed to by the parties concerned, a party supplying a portion or all of some other party's spinning reserve obligation shall be paid by the purchasing party, an amount of whichever is greater of the following:

(*a*) One hundred and twenty percent of the incremental cost of supplying such spinning reserve; or

(*b*) The incremental cost of supplying such spinning reserve plus one-half of the overall savings of such transaction, where overall savings shall be equal to the difference between the incremental cost of the selling party and the decremental cost of the purchasing party, where incremental and decremental costs, for the purpose of this schedule only, shall be determined as follows:

(*i*) Incremental cost of the supplying party shall be based on the costs incurred in starting and operating any generating unit or units which must be started as a result of supplying such spinning reserve.

(*ii*) Decremental cost of the purchasing party shall be based on the costs avoided by not starting and operating a generating unit or units.

4.02. In the event there are repetitive transactions between certain parties involving similar incremental and decremental costs, flat rates may be establishd for such transactions by the representatives of the parties concerned.

SERVICE SCHEDULE E. ECONOMY ENERGY INTERCHANGE SERVICE

This service schedule E is agreed to on this ____ day of ------, 195--, to be effective under and as a part of the Eastern Missouri Basin Power Pool memorandum of understanding and agreement (hereinafter referred to as "pool agreement"), dated ---------.

Section 1. Term of schedule

1.01. This schedule shall become effective upon the date hereof, or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering purchase and sale of economy energy.

Section 2. Service to be provided

2.01. This schedule provides for the supplying of economy energy by any group I party to any other group I party when it is economical and practical to do so under the conditions set forth hereinafter and in the pool agreement.

2.02. Economy energy, as used herein, shall mean that energy which can be supplied at a savings from one party's power sources which would not otherwise be fully utilized, but which can be utilized by another party (*a*) to reduce generation from units having higher operating costs, (*b*) to avoid starting generating units, or (*c*) to reduce or avoid more expensive firm energy purchases.

Section 3. Obligations of the parties

3.01. A party, other than an agency of the United States, when called upon to do so by some other party, shall supply economy energy to such other party, provided such call conforms with the other provisions of this schedule.

Section 4. Conditions of service

4.01. It is the intent hereof, that insofar as is practicable, economy energy from available sources having the lowest incremental costs shall be used to displace generation having the highest incremental costs and so on until such transactions are no longer economical, provided that—

(*a*) The delivery of economy energy will not, in the judgment of the supplying party, endanger its facilities or interfere with its obligations to its customers, to other parties, or to other electric utilities with which it is interconnected.

(*b*) Economy energy shall not be scheduled in amounts which will overload the transmission facilities of some other party or endanger the operation of the interconnected systems of the parties.

(*c*) The receiving party shall be entitled to call for economy energy only when it has available an alternate source of firm energy.

(*d*) Economy energy transactions between parties which are directly interconnected shall take precedence over transactions between parties which require the wheeling services of an intervening party, provided the net savings are equal or greater.

4.02. In the event that there are, with regularity, two or more simultaneous transactions involving economy energy between the parties hereto and any party feels that it is not sharing equitably in the savings, it may bring the matter to the attention of the engineering committee, which in turn may establish such principles and procedures as may be required to assure a more equitable distribution of the overall savings.

4.03. In the event a delivery of economy energy hereunder requires the wheeling services of an intervening party or parties, it shall be assumed, for the purposes hereof, that such delivery was made over the most direct route, as defined in article II of the pool agreement, and the wheeling party or parties involved in such route shall be compensated for the use of its (or their) facilities by sharing in the savings effected as provided in section 6 of this schedule and section 5 of service schedule G together with compensation for wheeling losses determined in accordance with section 6 of service schedule G.

Section 5. Scheduling of deliveries

5.01. Negotiations for economy energy transactions will normally be initiated by the party which desires to purchase said economy energy. Prior to the scheduling of deliveries, the parties concerned, including the wheeling party or parties, if any, will agree on hour-by-hour amounts of energy to be delivered and the applicable incremental and decremental costs to be used. The resulting amounts scheduled may subsequently be reduced at any time upon reasonable advance notice by any one of such parties, or may be increased by mutual agreement of all the parties concerned.

Section 6. Schedule of rates

6.01. The overall savings of an economy energy transaction shall be equal to the difference between the incremental cost of the supplying party and the decremental cost of the receiving party or, when the economy energy displaces purchased energy, the overall savings shall be equal to the difference between the incremental cost of the supplying party and the purchased-energy costs avoided by such economy energy transaction, where incremental and decremental costs shall be determined as provided in article II of the pool agreement.

6.02. In the event economy energy must be scheduled through the system of one or more wheeling parties in order to be delivered to the receiving party's system, such wheeling parties collectively shall be paid by the receiving party for wheeling such energy an amount equal to one-third of the overall savings as determined in paragraph 6.01 immediately above, but in no event shall any wheeling party be paid less than 0.2 mill per kilowatt-hour, nor shall all wheeling parties collectively be paid more than 1 mill per kilowatt-hour based on energy delivered to the receiving party.

6.03. The receiving party shall pay the supplying party for the economy energy supplied during each month, an amount equal to the incremental cost of the energy so supplied as defined in article II of the pool agreement plus one-half of the overall savings of such transactions which remain after deducting the amount paid by the receiving party to any wheeling party or parties in connection with such transaction pursuant to paragraph 6.02 of this schedule.

6.04. In the event there are repetitive transactions involving the same parties, flat rates may be established by mutual agreement of the representatives of the

parties concerned, including representatives of any wheeling parties concerned, provided that such flat rates are based on the above method of determining savings.

SERVICE SCHEDULE F. SEASONAL FIRM POWER INTERCHANGE SERVICE

This service schedule F is agreed to on this ____ day of _____, 195__, to be effective under and as a part of the eastern Missouri Basin power pool memorandum of understanding and agreement (hereinafter called pool agreement), dated _____.

Section 1. Term of schedule

This schedule shall become effective upon the date hereof, or upon such later date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersede this schedule by mutually agreeing to another service schedule covering purchase and sale of seasonal firm power and energy.

Section 2. Service to be provided

2.01. Inasmuch as some parties may have maximum demands during the winter seasonal period which are greater than their maximum demands during the summer seasonal period, and other parties may have maximum demands during the summer seasonal period which are greater than their maximum demands during the winter seasonal period, the generating capacity requirements of such parties can be reduced by the purchase or sale or seasonal firm power hereunder.

2.02. For the purposes hereof, the winter seasonal period shall include the period from October 1 of any year to March 31 of the succeeding year and the summer seasonal period shall include the period from April 1 of any year to September 30 of such year.

Section 3. Conditions of service

3.01. This schedule shall be available for the sale of seasonal firm power only by parties which have thermal generating facilities that are otherwise idle during certain seasons of the year due to the seasonal variation in such party's maximum demand.

3.02. Each party which anticipates it may wish to purchase or sell seasonal firm power and energy under this schedule, in submitting its semiannual load and capability forecast, shall include a statement of the amount of such power which it will have available for sale or would like to purchase, for each of the seasonal periods during the 3 succeeding years. A party which has indicated a desire to purchase seasonal firm power and energy during a certain seasonal period, may arrange to purchase, from some other party or parties which have indicated the desire to sell, seasonal firm power and energy during such seasonal period. Such arrangements shall be completed not less than 6 months in advance of the beginning of such seasonal period and such purchases or sales shall be for full seasonal periods. When wheeling over an intervening party's system is required, the purchasing party shall make arrangements for such wheeling at the same time and for the same period of time as the purchase arrangement.

3.03. In the event the total purchases of seasonal firm power desired by two or more parties exceed the total desired sales of all parties, or the total sales desired by two or more parties exceed the total desired purchases of all parties, such purchases or sales shall be divided among the parties desiring to purchase or sell, by the engineering committee.

3.04. The maximum amount of seasonal firm power which a party may sell during any seasonal period hereunder shall be 80 percent of the amount, by which its estimated highest maximum demand during such seasonal period is less than its estimated highest maximum demand for the seasonal period immediately preceding such seasonal period, but in no case shall such sales exceed the capacity available from otherwise idle generating capacity. The maximum amount of seasonal firm power which a party may purchase during any seasonal period hereunder shall be 80 percent of the amount, by which its estimated highest maximum demand during such seasonal period is greater than its estimated highest maximum demand for the seasonal period immediately preceding such seasonal period. In the event a party both sells and purchases seasonal firm power during consecutive seasonal periods the sum of such purchases and sales shall not exceed 80 percent of the difference between the estimated highest maximum demands of the two consecutive seasonal periods.

Section 4. Scheduling of deliveries

4.01. It shall be the responsibility of the purchasing party to initiate scheduled deliveries of power and energy hereunder, and the scheduled rate of delivery shall not exceed the amount being purchased under this schedule.

Section 5. Schedule of rates

5.01. A party purchasing seasonal firm power and energy under this schedule, shall pay the supplying party each month during the seasonal period such purchase is in effect, an amount which shall be equal to the sum of the following:

(*a*) $1.75 per kilowatt of seasonal firm power being purchased by such party during such seasonal period, plus

(*b*) 5 mills per kilowatt-hour, but not less than 120 percent of the incremental cost of producing such energy, for any seasonal firm energy purchased during such month, where such incremental cost shall be determined as provided in article II of the pool agreement.

5.02. In the event the delivery of any seasonal firm power and energy hereunder must be supplied through the system of an intervening wheeling party or parties, the provisions of service schedule G shall apply.

SERVICE SCHEDULE G.—WHEELING SERVICES AND LOSSES

This service schedule G is agreed to on this ____ day of ----------, 195--, to be effective under and as a part of the eastern Missouri Basin power pool memorandum of understanding and agreement (hereinafter called pool agreement), dated ----------.

Section 1.—Term of schedule

1.01. This schedule shall become effective upon the date hereof, or upon such date as it is approved by regulatory authorities having jurisdiction, and shall remain in effect until the parties to the pool agreement supersedes this schedule by mutually agreeing to another service schedule covering wheeling service and losses.

Section 2. Obligations of the parties

2.01. Each party hereto agrees that it will permit wheeling of power over its transmission facilities for deliveries of power and energy by any party hereto to any other party hereto under the pool agreement, provided that the delivery of such power and energy over the transmission facilities of the wheeling party, will not, in the sole judgment of such wheeling party, endanger its facilities or interfere with its obligations to its customers or to other electric utilities with which it is interconnected.

Section 3. Conditions of service

3.01. Whenever, pursuant to the provisions of the pool agreement and the service schedules which are a part thereof, power and energy is scheduled by one party to another party and such power and energy must be scheduled through the system or systems of some other party or parties hereto, it shall be assumed, for the purposes of the pool agreement, that the delivery will be made by the most direct route, as defined in article II of the pool agreement, but in no event shall the hourly amounts scheduled exceed the capability available in the facilities of the wheeling party or parties involved.

3.02. In the event a party desires to schedule a delivery of power and energy by wheeling in an amount which exceeds the capability available therefor in the system of the wheeling party or parties on such most direct route, and there is another route available and the available capability of both routes combined is adequate for such purpose, the purchasing party shall divide his scheduled purchase between the most direct route and the next most direct route in approximately the inverse ratio of their respective per unit impedances. The wheeling parties involved in any transaction shall be informed of such transaction and shall limit the amonut which may be scheduled for delivery over their facilities to a safe amount.

3.03. In the event a party schedules a delivery of power and energy to a party with which it is directly interconnected in an amount which, together with other loads carried by the direct interconnection or interconnections between such parties, exceeds the capability of such direct interconnection or interconnections and a portion thereof will flow through the system or systems of some other parties, the portion thereof which exceeds the capability of the direct interconnection or interconnections shall be scheduled for delivery through the system or

systems of such other party or parties as are on the most direct route for such excess. In no event shall such directly interconnected parties schedule an amount which will endanger the operation of the systems of the parties or of other electric utilities with which they are interconnected.

3.04. In wheeling transactions where transmission capacity must be reserved for a specified period of time, the wheeling charges as hereinafter provided in this schedule are based wholly or in part on transmission capacity thus reserved, and shall be made with due regard to the most direct route and division of wheeling fees, determined in the same manner as for scheduled energy, for the agreed period of purchase irrespective of whether power and energy are actually scheduled or delivered.

3.05. In the event the most direct route for wheeling power and energy from one party to another is through the system of an electric utility not signatory hereto, the parties concerned shall make appropriate arrangements with such electric utility for wheeling such power and energy.

Section 4. Schedule of rates

4.01. All charges for wheeling energy shall be based upon the amount of energy scheduled for delivery, or actually delivered to the receiving party and there shall be no wheeling charge for unintentional interchange or for inadvertent flows.

4.02. Wheeling emergency power and energy during the first 24 hours of an mergency pursuant to service schedule B, no charges will be made by a party hereto for the use of its facilities, other than loss compensation as provided in section 6 of this schedule.

4.03. For wheeling emergency energy after the first 24 hours and for wheeling scheduled outage energy, both pursuant to service schedule B of the pool agreement, the purchasing party shall pay the wheeling party or parties a total of 1 mill per kilowatt-hour or, in the event the distance wheeled is less than 70 miles, such lesser rate as may be established by the parties concerned after taking into consideration the facilities used.

4.04. For providing transmission capacity for wheeling reserve capacity and any energy associated therewith, pursuant to service schedule C, the purchasing party shall pay to the wheeling party or parties each month, a total of 5 mills per kilowatt of transmission capacity so provided for each mile such reserve capacity may be transmitted through its system (or their systems), but not more than 35 cents per kilowatt per month. There shall be no additional charge for wheeling the energy associated with reserve capacity other than compensation for losses in the wheeling party's system or systems, pursuant to section 6 of this schedule.

4.05. For wheeling economy energy pursuant to service schedule E, the compensation for wheeling shall be as provided therein.

4.06. For wheeling seasonal firm power and energy pursuant to service schedule F, the purchasing party shall pay to the wheeling party or parties monthly, a total of whichever is greater:

(*a*) Capacity charge of 5 mills per kilowatt per mile but not more than 35 cents per kilowatt, or,

(*b*) Energy charge of 1 mill per kilowatt-hour, or in the event the distance wheeled is less than 70 miles, such lesser rate as may be established by the parties concerned after taking into consideration the facilities used.

4.07. Charges for wheeling firm power and energy shall be in accordance with such separate agreement as may be entered into by the wheeling party and the supplier and purchaser of such firm power and energy.

4.08. The rates for wheeling provided under this section 4 shall be applicable only when the wheeling party both receives and delivers the energy at or above 50,000 volts, unless such rates are satisfactory to the wheeling party for delivery of wheeled power and energy at a lower voltage; otherwise the party purchasing such energy shall pay the wheeling party such additional wheeling fees as may be agreed upon by such wheeling party and the purchasing party.

Section 5. Division of wheeling fee between two or more parties

5.01. For wheeling power and energy over the systems of two parties in parallel, pursuant to paragraph 3.02 of this schedule, the wheeling fee of each party shall be based upon the amounts scheduled over such wheeling party's system.

5.02. For wheeling power and energy over the systems of two or more parties in series, the total wheeling fee shall be divided among such wheeling parties in the ratio of the wheeling distance through each such wheeling party's system

to the sum of the wheeling distances through the systems of all wheeling parties involved where the wheeling distance through a party's system shall be as mutually agreed to by all wheeling parties except that the wheeling distance through any one system shall not be considered to be in excess of 100 miles.

Section 6. Compensation for losses

6.01. Whenever a party hereto schedules power and energy over the system of an intervening wheeling party, and until the engineering committee establishes a different method of determining the compensation for losses in connection with wheeling, the amount of power and energy to be received by the wheeling party from the supplying party as compensation for losses shall be equal to 1 percent of the power and energy scheduled for delivery to the receiving party for each 10 miles or fraction thereof such energy is wheeled over the facilities of such wheeling party plus 1 percent for each transformation involved on the wheeling party's system, but in no event shall the loss compensation to any wheeling party exceed 7 percent of the power and energy so scheduled.

6.02. When there are two or more wheeling parties in series, the total wheeling loss compensation to all wheeling parties shall not exceed 10 percent of the power and energy scheduled for delivery to the receiving party. Where the total loss compensation for all wheeling parties involved, computed separately for each such wheeling party, pursuant to paragraph 6.01, immediately above, exceeds 10 percent, the portion of such 10 percent to be supplied to each wheeling party shall be in the ratio of that party's separately computed entitlement to the total separately computed entitlement of all wheeling parties to the transaction.

6.03. If, in the opinion of any wheeling party, the losses in its system are negligible or negative, no compensation shall be made for losses to such party.

Section 7. Priority of wheeling services

7.01. In the event of request for wheeling services in excess of the wheeling capacity available, the following priority shall prevail:

(*a*) Firm power and energy.
(*b*) Seasonal firm power and energy.
(*c*) Energy associated with reserve capacity.
(*d*) Emergency and scheduled outage energy.
(*e*) Nonfirm hydro energy.
(*f*) Economy energy.

The CHAIRMAN. Then you will submit for the record your answers to these other questions in writing?

Mr. AANDAHL. Yes; I will do that.

(The remaining questions, and answers subsequently submitted by Assistant Secretary Aandahl, were as follows:)

13. Could the requirements of the preference customers in the Missouri Basin be more economically supplied with energy if their requirements are met through large, integrated, regional bulk power supply operation or if each municipality and rural electric cooperative, or small groups of them, is forced to build relatively small generating stations of its own? Can Valley City, N. Dak., build a 7,500-kilowatt generator to meet its own municipal requirements and thereby obtain power as economically as it might be supplied by integration of Missouri Basin hydropower and large thermal generating stations? Are large thermal plants, such as those in Nebraska, or in lignite areas, more economical than small generating plants in each municipality or REA territory?

Answer. It is almost axiomatic that power can be produced in large thermal plants more economically than in small plants. However, transmission from large isolated plants to load centers may become an important factor and can diminish, and possibly in some cases negate the otherwise economy of a large plant versus a small plant. Each case requires careful review and study. There are many ways by which the local groups involved on their own initiative can accomplish the advantages of large power-plant efficiency.

14. What is the installed capacity of Fort Peck Dam and planned installed capacity? What proportion of Fort Peck generation is being marketed in Montana and what proportion will be so marketed after completion of the addition to power facilities? Is an intertie of the east buss and the west buss contemplated in the near future? Does the Bureau have adequate power in the western marketing area to supply REA cooperatives whose requests for alloca-

tion from the eastern power supply were rejected in the December study? If not, how will these western area cooperatives obtain power supply? Would it be possible to wire a 35,000-kilowatt generator at Fort Peck to feed into the western area in place of the 15,000-kilowatt generator now in that service?

Answer. Present Fort Peck installed capacity, 85,000 kilowatts; planned installed Fort Peck capacity, 165,000 kilowatts.

A portion of Fort Peck capacity (15,000 kilowatts) is connected to the west bus and it, together with 50,000 kilowatts installed capacity at Canyon Ferry, is being used to serve customers west of Fort Peck. Customers in Montana east of Fort Peck are served from integrated power supply of the remaining Fort Peck capacity and the capacity of all downstream plants. Studies of bus changes at Fort Peck are contemplated when such a change would appear to be of material benefit. The power supply for Fort Peck west is capable of meeting the requirements of preference customers in the area for several years since their load growth is quite modest. The power supply held in reserve for these customers is quite minor and would not significantly assist in meeting eastern area loads. If future studies indicate advantages to be gained by modifications at Fort Peck, the entire power supply from Canyon Ferry to Gavins Point powerplants would be integrated and be used in serving customers throughout the eastern division from the Continental Divide eastward.

15. Was the Department of the Interior advised by the Corps of Engineers that 1,033,000 kilowatts of firm power would be available in the Missouri River system in 1965; was this figure determined by the Bureau, or was it jointly determined?

Answer. The Corps of Engineers advises on the peaking and energy capabilities of the power system by months. The Bureau then relates these capabilities to the average load factor and the load pattern in the marketing area to determine the amount of firm power that may be marketed at the prevailing load factor. The Bureau of Reclamation and the Corps of Army Engineers' staff people are constantly jointly reviewing these power potentials.

16. How much firm and nonfirm power has the Bureau of Reclamation sold during the past 5 years from Missouri River powerplants under discussion; to whom and at what price?

Answer. Sales of firm and nonfirm power in the last 5 years in the eastern division by classes of customers and the total revenues are as follows:

Fiscal years		Nonpreference	Preference	Miscellaneous
1958	Energy:			
	Firm	88,051,301	1,896,231,745	6,480,590
	Nonfirm	1,173,550,632	153,576,648	4,812,207
	Revenue:			
	Firm	$485,175.81	$8,128,298.97	$18,663.00
	Nonfirm	$3,276,571.58	$451,855.79	$15,947.71
1957	Energy:			
	Firm	115,082,680	1,570,464,498	3,238,823
	Nonfirm	859,571,257	119,973,788	3,409,200
	Revenue:			
	Firm	$550,929.37	$6,659,625.11	$9,638.51
	Nonfirm	$237,361.18	$2,490,174.08	$11,345.91
1956	Energy:			
	Firm	76,684,941	940,096,605	3,133,262
	Nonfirm	631,814,367	204,014,943	2,941,272
	Revenue:			
	Firm	$358,798.82	$4,208,916.26	$13,036.08
	Nonfirm	$1,764,265.46	$572,997.44	$9,933.57
1955	Energy:			
	Firm	68,335,180	587,661,050	4,350,380
	Nonfirm	445,724,067	168,656,067	----------
	Revenue:			
	Firm	$329,918.34	$2,741,045.08	$22,089.75
	Nonfirm	$1,217,302.79	$468,043.06	----------
1954	Energy:			
	Firm	69,221,500	215,407,798	1,490,573
	Nonfirm	283,740,574	68,860,138	----------
	Revenue:			
	Firm	$329,197.67	$1,058,233.22	$7,561.27
	Nonfirm	$766,272.55	$191,757.54	----------

17. What criteria will be followed in marketing nonfirm power? Will preference customers be given preference?

Answer. The established policy for sale of nonfirm power provides that preference customers will be given preference in the sale of secondary energy and that such preference will also pertain within each price block for dump energy.

18. What studies are available to show that the marketing policy and procedures being pursued will maximize the Government's revenues from the Missouri River works and maximize benefits to electric power consumers in the area?

Answer. It is the Bureau's objective to maximize the amount of firm power which can be marketed within the limits of water availability. Firm power is sold throughout the area at the same standardized rate. It is also an objective to sell the maximum of nonfirm energy in the secondary classification in order to maximize revenues. No particular studies are available to show the effect of such actions.

19. Can the committee be supplied with construction schedules and operating plans, indicating the dates when new power facilities are to come on the line, and river operation plans, which will be helpful to preference customers in the area in planning their power supplies for the next few years?

Answer. On-line dates as estimated by the Corps of Engineers for additional main stem plants are:

Garrison No. 4	January 1960.
Garrison No. 5	July 1960.
Fort Peck 2d plant No. 1	March 1961.
Fort Peck 2d plant No. 2	June 1961.
Oahe No. 1	July 1962.
Oahe No. 2	November 1962.
Oahe No. 3	March 1963.
Oahe No. 4	July 1963.
Oahe No. 5	November 1963.
Oahe No. 6	March 1964.
Oahe No. 7	July 1964.
Big Bend	July 1964 and later.

Estimates of additional firm power to meet winter loads and dates of availability are:

	Kilowatts
1960	34,000
1961	106,000
1962	86,000
1963	189,000
1964	35,000
1965	28,000
Total	478,000

The forthcoming allocation of power will dispose of all of the above firm power. Firm power from Big Bend will be considered at a later date.

20. What are the Interior Department's policies in regard to transmission charges where there is displacement of power? Do practices of the Bonneville Power Administration and Bureau of Reclamation in regard to recognition of displacement differ? Does the Bureau's policy on displacement vary between areas? (See transcript, p. 77.)

Answer. Bureau policy reflects that when other parties utilize the Bureau transmission system for transfer of power, a wheeling charge for such use is payable. This policy is uniform throughout the area of Bureau operations in the 17 Western States and is applied without recognition that displacement of power may occur. The Bonneville Power Administration follows this same policy.

21. Has the Bureau declined to exchange power with rural electric cooperatives, or generating and transmission cooperatives, in any cases that such exchanges would have permitted use of their steam capacity to firm additional hydroelectric energy (transcript, p. 78)? What is the policy of the Department in regard to such arrangements?

Answer. The Bureau exchanges or purchases energy in less than average water years in order to firm up the firm power capability based on average water years. Such deficiency energy is obtained from whatever source is the most advantageous to the Bureau. The Bureau has had no specific offer

by any rural electric cooperative or generating and transmission cooperative for exchanges involving steam capacity to firm additional hydroelectric energy. An informal offer of such nature, however, has been made by a public agency in Nebraska. We would evaluate, in any purchase of firming power that we might make, all tenders in terms of conditions of supply and the economics involved.

22. Does the Bureau recognize preference rights of public and cooperative agencies to use of Federal transmission lines (transcript, p. 78)?

Answer. The Bureau has had no occasion in which there has been a conflict as to whether preference or nonpreference customers should have a prior right to use Federal transmission lines for wheeling. If necessity should arise for distinguishing for such a right to use, the preference customers would be given prior rights.

23. Has the Bureau made any study of thermal generation available in the eastern Missouri Basin marketing area which might be made available, by purchase or exchange of power, to firm more of the 1,565,000-kilowatt machine capacity of the Missouri River dams (transcript, p. 93)? What discussion has the Bureau of Reclamation had in regard to using the 300,000 kilowatt salable excess winter thermal capacity in Nebraska (transcript, p. 248)?

Answer. The Bureau has made no studies relating to the use of thermal capacity for peaking in order to increase salable firm power. No discussions in particular have been had with Nebraska interests in this regard. Reference is also made to the oral answers given at the hearing before your committee on March 5 to questions 9, 11, and 12.

24. How much will Big Bend Dam increase firm capacity available in the eastern marketing area?

Answer. The amount by which the Big Bend will increase system firm power capability has not been determined.

25. Is it anticipated that the proposed eastern Missouri Basin power pool, if formalized by an agreement, will make it possible for the Bureau of Reclamation to firm more of its power?

Answer. The Bureau of Reclamation is cooperating with other power interests in a survey of the benefits of such a pool and the manner in which it can properly participate.

The CHAIRMAN. We will take a recess now until 2 o'clock.

Mr. AANDAHL. Do you want me to come back at that time, Mr. Chairman?

The CHAIRMAN. No.

Mr. AANDAHL. We will have an Interior representative up here as an observer.

The CHAIRMAN. Thank you.

(Whereupon, at 11:50 a.m. the committee was recessed, to reconvene at 2 p.m. the same day.)

AFTERNOON SESSION

The CHAIRMAN. The hearing will come to order, please.

I am required to be on the floor of the Senate in a short time, so Mr. Stong, my assistant, will conduct the proceedings in my absence.

I have here a statement from Gov. John E. Davis of North Dakota which will be placed in the record.

STATEMENT OF HON. JOHN E. DAVIS, GOVERNOR, STATE OF NORTH DAKOTA

Mr. DAVIS. Mr. Chairman, under permission heretofore granted by you, I am grateful for the opportunity to make a statement in connection with the hearings on the above subject.

North Dakota's stake in the Missouri River Basin development is as great as that of any State in the valley. Our people will be satisfied with nothing less than the maximum benefits from the integrated operation of the main-stem reservoirs.

The taking of 548,000 acres of fertile and valuable bottom and grazing lands in North Dakota for the Garrison and Oahe Reservoirs is an irreparable loss to both our economy and population. Future income and production from that acreage has forever been lost and destroyed. Long-established homesteads have been wiped out and the families forced to move to less desirable locations or seek other work in urban areas.

These reservoirs reach almost across the entire width of our State and create a barrier to all forms of land transportation.

In order to obtain North Dakota's assent to the Pick-Sloan plan as authorized in the Flood Control Act of 1944, a clear understanding was reached by the affected States and a tacit promise made by Congress that the irrigation development proposed in the basin plan would go forward concurrently with the main stem construction program. It was agreed that such irrigation development would constitute a partial reimbursement and compensation for the land taken for the two reservoirs. Additional benefits we were assured would accrue through flood prevention, dependable water supplies for domestic, municipal, industrial and agricultural needs, for power generation, recreational opportunities, pollution abatement and other purposes.

Up to now, nearly 15 years later, a precious few of these benefits have been realized. Not one single acre of land has been developed for irrigation from the Garrison reservoir; the promised water for municipal and industrial expansion, with the one exception, still remains in the reservoir; and the hydropower allotment to preference customers in the State is much less than expected.

Regarding the allocation of Federal basin power, it is my feeling that the taking of large areas of land in a State for a project, or projects, should be a preponderant factor in allotting it to eligible users in such State. This would be a fair and equitable means of making further restitution for the damage caused the affected State and her people.

I recommend that the loss of land to reservoir construction which includes facilities for the generation of basin power be assigned a heavy weight factor in considering and allotting power quotas within such adversely affected States.

Much has been said and heard about slack water for navigation in lower Missouri River. Many feel this would make more water available for more power generation. The economic and engineering feasibility of such proposal appears to be debatable and needs further investigation and study. Until much more information thereon is available no determination of its merits can be made.

I believe and recommend that an ascertainment of the cost of providing slack water navigation in lower Missouri River both with and without hydropower generating features, be made. Only then can it be determined what, if any additional benefits slack water may have over free flowing river navigation. To that end, I would support an effort to obtain funds for such study. I believe it would be

money well spent if this were done and I am hopeful that Congress will undertake such work in the near future.

The CHAIRMAN. Our next witness this afternoon will be Colin Raff, vice president of the Montana Power Co. of Butte, Mont.

STATEMENT OF COLIN RAFF, VICE PRESIDENT, THE MONTANA POWER CO., BUTTE, MONT.

Mr. RAFF. Thank you, Mr. Chairman.

The CHAIRMAN. You may proceed.

Mr. RAFF. Mr. Chairman, my name is Colin Raff and I am vice president of the Montana Power Co., with headquarters in Butte, Mont. We would like to present our views on this highly important problem of electric power allocation in the Missouri River Basin which your committee has under consideration.

To provide the committee with some factual background and to explain our interest in this problem, I thought I might tell you something about the Montana Power Co., although the chairman with his vast knowledge and experience in Montana, certainly needs no introduction to our company.

Montana Power serves 500,000 people. The company is a medium-sized investor-owned utility which supplies electricity in a 90,000 square-mile area of Montana, serving approximately 500,000 of the State's population. We also supply natural gas in the western, central, and northern areas of the State, serving approximately 220,000 people with that commodity.

The CHAIRMAN. When was it created?

Mr. RAFF. 1912.

The CHAIRMAN. Not before 1912. I thought it was created before that.

Mr. RAFF. It was created on December 12, 1912, by a merger of Butte Electric & Power and Billings of Eastern Montana.

The CHAIRMAN. There were a great number of companies serving the State of Montana at that time.

Mr. RAFF. That is true.

The CHAIRMAN. This organization brought together a number of those independent companies.

Mr. RAFF. That is correct.

The CHAIRMAN. I was there at the time and I remember that.

You may proceed.

Mr. RAFF. Thank you.

We own and operate 13 hydroelectric projects on the rivers of Montana, and we have a steam-electric generating station in Billings. Our total generating capability is 596,000 kilowatts. When we include the 75,000 kilowatts of power we purchase under firm contracts, our system capability is 671,000 kilowatts.

We also operate 12,282 miles of electric transmission and distribution lines to carry the power to our customers throughout Montana.

We supply power at wholesale to 13 REA cooperatives in Montana, serving the full requirements of 8 REA's and the partial requirements of the other 5. Our REA rate is the same as that charged by the Bureau of Reclamation in the Missouri River Basin, and in 1958 our revenues from REA sales averaged 4.91 miles per kilowatt-hour, which

is one of the lowest, if not the lowest, REA rate of any investor-owned utility in the country.

The Montana Power Co. has maintained a policy of installing generation ahead of the requirements of its customers so that, at all times, we have an ample supply of power to take care of the needs of existing customers to provide for growth on the system and to serve new customers as they appear.

At the present time, as a result of the completion of our Cochrane hydroelectric development near Great Falls last summer, which added 60,000 kilowatts to our capability, we have surplus power, over and above the needs of our customers. We anticipate that our present power supply will be adequate for the next 4 years or so. However, we already are making studies for future generation and we expect to build new plants as they are needed to meet expected load.

You might be interested in the fact that we have been quite successful in building generating plants on an economic basis. Our steam-electric plant at Billings cost less than $90 per kilowatt, some of our hydroplants have been built at a cost of approximately $100 per kilowatt, and our most recent plant, the Cochrane development, was built at a cost of less than $180 per kilowatt.

It is our position that the preference clauses in Federal power marketing laws discriminate unfairly against the 500,000 Montana people who rely on the Montana Power Co. for service.

As the preference clause is applied by the Bureau of Reclamation in the Missouri Basin, power generated in Montana is to be exported great distances to preference customers in North and South Dakota and Nebraska. Thus, the people of Montana, which has provided the water for this power and the land on which the water is stored, are deprived of the opportunity to share in the power which is produced in Montana.

At the present time we are purchasing at standard firmpower rates from the Bureau of Reclamation 25,000 kilowatts of power for use in the Havre-Whatley area of northern Montana. This power is distributed to approximately 13,000 direct customers, 2 REA cooperatives, and the Glasgow Air Force Base.

We have been told by the Bureau that we cannot purchase firm power for these Montana customers beyond April 30, 1962, because after that date, all of the Fort Peck and Canyon Ferry power will be required for preference customers downstream on the Missouri River.

We maintain this position of the Bureau is unfair because:

First, it deprives Montana people of the opportunity to share in the power produced in this State,

Second, it is an uneconomical arrangement because it involves the transmission of power a distance of at least 678 miles from Canyon Ferry Garrison dam, at great losses, and

Third, it deprives the Government of a market for the sale of firm power in the interim period.

Mr. STONG. Mr. Raff, if I may interrupt, this is very interesting to me. You say you have been notified that the Fort Peck and Canyon Ferry power will be required downstream on the Missouri?

Mr. RAFF. That is right.

Mr. STONG. Is this in writing or orally?

Mr. RAFF. This has been in discussions we have had with them.

Mr. STONG. They have never put that in writing?

Mr. RAFF. I can't recall that they have, Mr. Stong. We have had some discussions with the Bureau trying to see if we can't extend this firm power arrangement beyond the year 1962 and the reason that has been given to us is that there will be no power available to us after that date.

Mr. STONG. You say here that they are proposing to transmit power 678 miles from Canyon Ferry to Garrison. According to Secretary Aandahl and the engineer's testimony this morning, this would be a physical impossibility at this time because they cannot cross the buss at Fort Peck.

Mr. RAFF. We have been told that, Mr. Stong. What we have been told is that the Fort Peck buss is divided at the present time with only a 15,000-kilowatt generator on the west buss and the other 70,000 kilowatts on the east buss.

This Canyon Ferry power cannot get through at this time. They have told us in the Billings office that they have made some studies and it is possible by 1962 they will tie that buss together so that the power will flow east.

Mr. STONG. Did you hear the testimony this morning?

Mr. RAFF. Yes. sir.

We feel the action of the Bureau discriminates against our Montana customers and the REA's we supply, and that it does not give consideration to the Glasgow Air Force Base, which is highly important from a national defense standpoint.

The attitude of the Bureau of Reclamation on Missouri Basin power developed in Montana is vastly different from the attitude of the Bonneville Power Administration, west of the Continental Divide. Senator Murray is completely familiar with the geographical allocation which has been set up for Hungry Horse project in Montana because he was one of those who were instrumental in getting that policy established and he has seen it work.

Under the Bonneville Power Administration's geographical allocation, a reasonable percentage of the power attributable to the Hungry Horse project is marketed in Montana. The Montana Power Co. purchases 50,000 kilowatts of this power under a long-term contract, and this power is subject to the preference customers in Montana.

In other words, the power stays in Montana for use by Montana people and Montana industries, and our allotment would be withdrawn from us only if the power is required by Montana preference customers.

We feel that a similar program would be highly desirable in the Missouri Basin, related to power from Fort Peck and Canyon Ferry. In this way, our Montana customers would be given an opportunity to share in the power developed in our State and, at the same time, the future requirements of Montana REA cooperatives would be protected.

We understand that power allocations in the Missouri River Basin have resulted in Montana REA cooperatives being told that they may not receive their full requirements beyond 1963 and that, as a result, they have been considering the construction of steamplants.

is one of the lowest, if not the lowest, REA rate of any investor-owned utility in the country.

The Montana Power Co. has maintained a policy of installing generation ahead of the requirements of its customers so that, at all times, we have an ample supply of power to take care of the needs of existing customers to provide for growth on the system and to serve new customers as they appear.

At the present time, as a result of the completion of our Cochrane hydroelectric development near Great Falls last summer, which added 60,000 kilowatts to our capability, we have surplus power, over and above the needs of our customers. We anticipate that our present power supply will be adequate for the next 4 years or so. However, we already are making studies for future generation and we expect to build new plants as they are needed to meet expected load.

You might be interested in the fact that we have been quite successful in building generating plants on an economic basis. Our steam-electric plant at Billings cost less than $90 per kilowatt, some of our hydroplants have been built at a cost of approximately $100 per kilowatt, and our most recent plant, the Cochrane development, was built at a cost of less than $180 per kilowatt.

It is our position that the preference clauses in Federal power marketing laws discriminate unfairly against the 500,000 Montana people who rely on the Montana Power Co. for service.

As the preference clause is applied by the Bureau of Reclamation in the Missouri Basin, power generated in Montana is to be exported great distances to preference customers in North and South Dakota and Nebraska. Thus, the people of Montana, which has provided the water for this power and the land on which the water is stored, are deprived of the opportunity to share in the power which is produced in Montana.

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We understand that power allocations in the Missouri River Basin have resulted in Montana REA cooperatives being told that they may not receive their full requirements beyond 1963 and that, as a result, they have been considering the construction of steamplants.

As I have pointed out, the Montana Power Co. has surplus power and we believe it would be worth negotiating with the REA cooperatives in eastern Montana to see if some plan could not be worked out by which we would supply their requirements if the Bureau is unable to supply them. We are confident that we could sell power to the REAs at a lower rate than they would have to pay for power they generated themselves.

The power could be made available to the REA cooperatives over Bureau lines, either by wheeling or by a plan of displacement. It would require the cooperation of the Bureau and utilization of the Bureau's line from Great Falls to Fort Peck, but certainly it is worth investigating such a plan to see if it could not be worked out.

If power from Fort Peck and Canyon Ferry could be reserved for use in Montana and if that power were coordinated with the power on our system, it would remove the threat that exists by reason of there not being enough power ultimately to take care of the REAs' growth. We will build additional generation to take care of the total Montana load of our company, and the use of such energy, with Fort Peck and Canyon Ferry used for peaking power, would take care of the requirements of the Montana REA cooperatives and would give them the lowest possible rate.

Witnesses before this committee have urged that a Federal transmission interconnection be installed between Anaconda and Canyon Ferry to tie together the facilities of the Bonneville Power Administration and the Bureau of Reclamation.

We see no justification for that intertie line. The systems of Bonneville Power Administration and the Bureau of Reclamation now can be interconnected through the system of the Montana Power Co.

The Montana Power Co. has a 161,000 volt transmission line from Anaconda to Billings, a 100,000 volt line between Anaconda and Butte, and two 100,000 volt lines running from Butte to Great Falls as well as a 100,000 volt line which interconnects with the Anaconda load center from the Holter plant near Helena. In addition a 161,000 volt line running from Anaconda south into Utah serves the Vigilante REA region in the Dillon, Mont., area.

Federal transmission facilities in this area would do nothing except duplicate facilities of the Montana Power Co. and provide a system interconnection which already exists.

We recognize that the problem of power allocation in the Missouri River Basin is a serious one and that it poses complex considerations for this committee.

The Montana Power Co. will carry out its part of the job by making sure that adequate power is available for its Montana customers, including the REA cooperatives that it serves. However, it feels that the preference clauses work unfair hardship on the Montana people who rely on the company for their electric service, and we urge this committee to give consideration to the matter of geographical allocation so that Montana and its people may have an opportunity to share in the power produced by the hydroelectric projects that are located in this State.

The CHAIRMAN. Thank you, sir.

Mr. RAFF. That concludes my statement, Senator. I want to express to you my appreciation and the appreciation of my associates for your allowing us to make this statement today.

The CHAIRMAN. We thank you for your statement.

Are there any questions, Mr. Stong?

Mr. STONG. Yes, I have two or three.

You refer on page 5 to the existence of 161,000-volt line running from Anaconda south into Utah which serves the Vigilante REA region and the Dillon, Mont., area.

Mr. RAFF. Yes.

Mr. STONG. Is the Vigilante REA able to take power off that line or get power at load centers anywhere along that line?

Mr. RAFF. Yes. We have a substation at Dillon which steps the energy down to a voltage at which they can take it.

Mr. STONG. Is that line withdrawn from wheeling? Will you wheel Bureau power on that line for the cooperatives.

Mr. RAFF. That is part of the general wheeling contract we have with the Bureau.

Mr. STONG. So that power could be wheeled to them anywhere on that line.

Mr. RAFF. Subject to the capacity of the line and I would have to check that. Generally speaking, I think that is right.

Mr. STONG. Is it possible on your line from Anaconda to Helena to transmit Bonneville power as far east as Billings?

Mr. RAFF. From Anaconda to Billings.

Mr. STONG. You pick up Bonneville power at Anaconda, do you not?

Mr. RAFF. That is correct. We have a connection at Anaconda and also one at Kerr.

Mr. STONG. So it is possible for you to carry Bonneville power to Billings?

Mr. RAFF. Yes, it would be possible.

Mr. STONG. Incidentally, your written statement said that the Bonneville and Bureau of Reclamation "are" interconnected and in your testimony you said "can be."

Mr. RAFF. The physical interconnection exists between our lines and their lines.

Mr. STONG. Whether there is power flowing or not?

Mr. RAFF. Yes.

Mr. STONG. One of the matters that has been raised with Senator Murray's office is that while Montana Power Co. is able to supply, they will not always do so. They cite the case of the Park Electric Cooperative, in which the electric co-op and your company were competitors for the Yellowstone Park load.

Mr. RAFF. Yes.

Mr. STONG. The cooperative complains that the power company declined to provide them with bulk power for that competitive load, is that correct?

Mr. RAFF. I might explain what happened there. At the time the Park Service was considering service to all of their points in Yellowstone Park, we were already serving the park headquarters at Mammoth. We had made an application to the Park Service to provide

them with power. The Park County Cooperative, I understand, also did. We concluded that was the type of load that we were designed to serve and that we could not quote them a rate that would make it economically feasible for them to serve the park.

Mr. STONG. Is it your policy to supply REA co-ops with wholesale power supply where they will become a competitor of yours for load?

Mr. RAFF. We serve, as I say, 13 co-ops, 8 of them with their full requirements and 5 with their partial requirements. I would say that generally speaking they have been competitive with us in almost every instance.

Mr. STONG. For rural load?

Mr. RAFF. For rural load and in some instances the REA lines have come into a point where they are serving suburban and commercial loads, also.

Mr. STONG. You do differentiate in determining whether or not you will provide them with power as to whether or not the area they are going to serve you regard as competitive?

Mr. RAFF. No. The contracts we have with the cooperatives at the present time are set up so that they notify us 3 years ahead of time of what power they need. We have not made a practice of inquiring into the use of that power. In all instances we have told them we would supply them with the power for their growth on their system.

In addition, we have agreed to wheel power to the ones that come to my mind, Northern Electric Co-op and the Valley County Cooperative. The Northern Electric Cooperative is outside our service area, the Valley County Co-op is in our service area but is served by the Bureau and we have arranged to wheel power for the Bureau for those loads.

Mr. STONG. Is the wheeling rate in Montana still a mill for 50 miles?

Mr. RAFF. That is right.

Mr. STONG. I notice the pooling agreement which is being negotiated in the eastern division of the upper Missouri Basin proposes a maximum charge of 1 mill scaled down under 70 miles. It goes to 1 mill at 70 miles, plus 7 percent for losses.

Is there any reason why it is more economical to wheel in this eastern area than in Montana generally?

Mr. RAFF. No, except that it has been our feeling that we have about 4,000 miles of transmission lines and in our discussions leading up to the contract with the Bureau we felt that the rate which was finally put in the contract was one that would allow us to recover our costs for wheeling.

Mr. STONG. Has there been any review of that rate in recent years.

Mr. RAFF. Not officially, no.

Mr. STONG. Do you regard it as necessary or is there a possibility that it might come down some day?

Mr. RAFF. I have not given it any thought, Mr. Stong.

Mr. STONG. I believe I have one more question.

Referring back to Canyon Ferry power, as I recall it, Montana Power Co. takes off all of that power at the bus bar, does it not?

Mr. RAFF. I don't believe it is all of it. I might explain it this way. This 25,000 kilowatts of power which we buy at firm rates, and which incidentally in 1958 we paid 5.54 mills for, we have been in-

formed that some of that comes from Fort Peck and other at times comes from Canyon Ferry. It is not specified in the contract that it comes from either one. We also buy surplus power from the Bureau from their Canyon Ferry project under an arrangement which we made with the Bureau of Reclamation to try to provide a market for that power rather than see it spilled downstream without any revenue at all to the Bureau.

Mr. STONG. As I recall, for a few years at the outset, the Montana Power Co. took all of the power and received 50,000 kilowatts at the secondary rate.

Mr. RAFF. I believe that is right.

Mr. STONG. Wasn't a great deal of the power then exported from the State of Montana?

Mr. RAFF. Yes. As I say, we have tried to supply a market for this power rather than have it go downstream without any revenue at all to the Bureau, and very often we have taken that power when we could not absorb it on our own system and have resold it to other utilities at the same rate at which we purchased it.

Mr. STONG. Do you know where it went when it was sold. Didn't some of it go out into the Bonneville area?

Mr. RAFF. That is right.

Mr. STONG. I think that is all.

Mr. RAFF. Thank you very much.

Mr. STONG. Senator Curtis of Nebraska, has arrived.

Senator Murray had to go back to the floor. I understand you have a statement and a witness or two you would like to present.

STATEMENT OF HON. CARL T. CURTIS, A U.S. SENATOR FROM THE STATE OF NEBRASKA

Senator CURTIS. Yes. I will follow whatever is the pleasure of the committee.

Mr. STONG. You may proceed in your own manner, Senator.

Senator CURTIS. Mr. Chairman, I want to thank you for your courtesy in allowing me to testify. I desire to express myself for a few moments to a matter in which I have long been interested and which is of vital concern to the future economic development of Nebraska. I refer to the distribution of the electric power generated by the great dams constructed by the Corps of Engineers on the Missouri River. The problem is referred to locally as the distribution of Missouri Basin power.

My interest is the development of the Missouri River Basin goes back a long way. I authored the resolution in the House of Representatives that brought forth the Pick plan of the Army Engineers for the Missouri River Basin. I served on the Flood Control Committee that wrote the authorizing legislation. The bill went to the Senate, and by that time the plan of the Bureau of Reclamation plan, known as the Sloan plan, was presented to Congress. The Senate added the Sloan plan to the Pick plan. The bill went to conference and I served as a conferee on the part of the House. In the conference, the Senate version, combining the two plans, was approved. The power preference clause was approved in the conference. Later, the conference report was approved by both the Senate and the House,

and the Missouri River Basin plan, sometimes known as the Pick-Sloan plan, came into being as part of the Flood Control Act of 1944.

The Missouri drainage basin includes parts of the States of Montana, Wyoming, Colorado, North Dakota, South Dakota, Minnesota, Iowa, Kansas, Missouri, and Nebraska. Nebraska is the only one of these States which lies wholly within the basin. All of the other States lie partially, and some of them almost wholly, outside the basin.

From these facts it would seem that Nebraska, as the heart of the basin, was entitled to the utmost consideration in the distribution of, say, benefits which arise from these great projects.

Nebraska is unique in another particular. It is the only all-public power State in the Union. Many years ago all of the private utilities in Nebraska were sold to public agencies of the State of Nebraska, which are denominated as public power districts and political subdivisions of the State, and which for many years have produced, transmitted, and distributed all of the electric power in Nebraska.

It is obvious, therefore, that Nebraska and all of its electric loads are preference customers within the conception of the distribution of federally generated power to preference customers. One would assume, therefore, that Nebraska was entitled to an equal pro rata share of all of the power generated in the basin, along with and in equal proportions to the preference customers within the other States in the basin.

I am, therefore, Mr. Chairman, much disturbed by a revised tabulation of the Department of the Interior's proposal for the distribution of this power which was issued by the Department on February 20, 1959, because that tabulation shows that whereas most of the other preference customers within the basin are receiving somewhere from 60 to 83 percent of their total power requirements from these Federal facilities, Nebraska, the only State wholly within the basin, the only completely public power State in the Union, is only receiving 22 percent of its requirements.

This tabulation shows that the total estimated load of the preference customers within the basin is 2,122,695 kilowatts, and that of that amount Nebraska's estimated load is 920,715 kilowatts, or nearly 50 percent of the total electrical requirements of the Basin States. I am completely at a loss, therefore, to understand why Nebraska's share of this allocation is only 22 percent of its requirements.

I understand that is the first instance in the allocation of this power the Interior Department gave weight to the theory that it would deduct from the equal pro rata share of each of these preference customers whatever generating capacity the customer had which was usable. This obviously would work a very serious injury to Nebraska, and I think it is unfair.

For many years Nebraska has provided its own generating equipment. It has issued through its various public agencies nearly $210 million of revenue bonds to provide great generating stations, hundreds of miles of high-voltage transmission lines, and still other hundreds of miles of secondary distribution, to serve more than 300 cities and towns within the State.

There is some misunderstanding in certain quarters as to the nature of Nebraska's public power system. It is not Federal power. The cost of acquiring these power systems has been borne by Nebraskans.

The money secured for this purpose was almost totally private money. Revenue bonds, totaling $210 million, were issued by Nebraskans to obtain this private money. Bonds were issued by the Federal Government for PWA loans totaling $43 million and those are now held by the GSA, but they constitute but a small portion of the total. These figures that I have cited do not include the municipal power systems and distribution systems owned by hundreds of our cities and towns. I have also excluded REA from this tabulation because that is a nationwide program that serves all of the States alike.

Should Nebraska be penalized because its people have assumed their own burdens, carried their own loads and made those tremendous investments? And is it fair that other areas which have not invested any of their own money, which have not made any attempt to carry their own responsibilities, are now to be favored by a greater allocation of power than a State which has endeavored to care for its own needs? It seems to me such a plan is obviously unfair; that, if anything, the State or community which has provided its own capacity and invested its own money should be actually favored as against those who have done nothing.

I understand that plan has now been abandoned by the Interior Department, but that the present allocation is based upon a percentage of requests for power that was made to the Bureau of Reclamation. Mr. Chairman, this plan is equally unfair.

Because Nebraska has been an all-public power State, there have been constant misgivings by some of its neighboring States that, due to its highly preference position, Nebraska would receive more than its fair share of this power. For that reason, our Governors through the last several years and the managers of our public power agencies have repeatedly assured their sister States that Nebraska would never ask for more than it actually needed and would make no attempt to take advantage of its highly preference position. The result is that, although Nebraska had an estimated electric load of 920,715 kilowatts, the State only asked for an allocation of 267,019 kilowatts. This was based upon the utilization of much of the equipment which the State has bought and paid for and was done in an attempt to be more than fair with the other States in the basin.

On the contrary, we now find that many other preferred customers within the basin have made application for their total power supply and in some cases have actually applied for more power than their own estimates show will be usable in 1963. It is obvious, therefore, that when the Department undertakes to apportion power on the request for allocations which it has, that it is still doing a very grave injustice to Nebraska. According to the theory now adopted, if Nebraska had asked for three times as much as it did ask for, it would receive an allocation somewhere in proportion to that received by other States. We are paying, therefore, a very high penalty for our integrity and fairness in not asking for our total requirements.

Again let me point out that Nebraska, through the Rural Electrification Administration and through financing of its own, has constructed, or is in the process of constructing two major transmission lines to its nearest source of power at Fort Randall; whereas, other States have invested no money whatever in transmission lines. On the contrary, the Department has built hundreds of miles of basic trans-

mission system for the distribution of power to neighboring States, so that here again, Nebraska is being penalized for having the prudence and foresight to make its own investments with its own money to meet its own needs.

It is said that Nebraska is receiving more power than I have herein indicated because it is getting approximately 100,000 kilowatts of so-called summer firm power. This is power which would otherwise go to waste during the flood seasons of the summer, and even that power is to be withdrawable from Nebraska in 1966 for the purpose of providing pumping energy to pump water onto irrigated areas in the States to the north of Nebraska.

For all these reasons, therefore, Mr. Chairman, I deem the present allocations to be completely unfair and inequitable to the only State in the basin which has stood on its own feet, financed its own needs, and, therefore, contributed millions of dollars to a firm supply of energy in its area in the basin. I can see no reason why municipal plants in Minnesota, which already have firm contracts for power supplies from other sources, should now receive 83 percent of their total requirements from the Federal Government, with no expense for transmission lines or anything else, when Nebraska, which has provided itself with adequate generation and transmission facilities, should be given only this relatively insignificant portion of its needs.

I shall insist that the Bureau of Reclamation, charged with the responsibility of making these allocations, consider the equities that I have pointed out herein and give to Nebraska its fair pro rata share, based on its total needs, of the power generated by Federal dams in the Missouri Basin.

Mr. STONG. Thank you, Senator Curtis. Do you want to introduce your Nebraska witnesses, Mr. Schacht and Mr. Venable?

Senator CURTIS. Yes, if they would both come up here.

Mr. SCHACHT. I think I have some comments to supplement what Mr. Venable said two weeks ago. He will not testify.

Senator CURTIS. I would like to say something for the record before I leave.

Mr. Chairman, from what I have just stated in my own statement, you can understand that Nebraska has given considerable attention to the power needs for a long time. It has meant that we have well managed districts and systems in our State, and we have some leaders in the power field that are as competent or more so than you can find any place. Some of them have already testified and it is my pleasure now to introduce another one, Mr. Ray Schacht of Columbus, Nebr.

STATEMENT OF R. L. SCHACHT, GENERAL MANAGER, CONSUMERS PUBLIC POWER DISTRICT OF NEBRASKA

Mr. SCHACHT. Thank you, Mr. Chairman. I appreciate the opportunity to make a few comments in connection with this matter of allocations of Missouri River Basin power. I was out of the United States when the hearings were held in the middle of February, so I could not attend those. Mr. W. P. Venable, superintendent of power supply, was present and testified. There are a few comments that I would like to make supplementing his testimony at that time.

The Consumers Public Power District in its eastern system, which is the one which is involved in the present allocations of power, serves about 320 communities, 50 of which are at wholesale, the remainder at retail, representing over 100,000 customers. These are all preference loads entitled to all of the rights of preference customers any place within the Missouri River Basin.

There is no basis whatsoever in my opinion for preference customers in Nebraska to receive any less favorable treatment than preference customers in other parts of the Missouri River Basin.

I fully appreciate that the job of allocating the available power is a very difficult one, particularly when the applications are exceeding the amount of power that is available.

I cannot, however, subscribe to the theory that so long as everybody is unhappy with these allocations that they must be equitable. That theory has been advanced. I do not believe it is sound at all.

It seems to me that in a large measure the difficulties that are being experienced in this allocation stem from the fact that the Bureau has failed to develop any sound basis on which they are going to proceed. I think that was evident this morning in Mr. Aandahl's testimony. The basis that they used in 1954 was not any firm or sound basis. That resulted in some preference customers securing 100 percent of their anticipated 1958 loads as Bureau power, other customers receiving varying percentages down as low as zero, even though as a preference customer they were certainly entitled to power.

It seems to me that this has left the preference customers in the basin completely confused and bewildered, not knowing what type of a yardstick is going to be applied and on what basis applications should be made.

I think it was likewise evident this morning that even in the present allocation two different bases have been considered. It was indicated that neither one of those is yet final. It seems to me that it is crystal clear that one thing that holds true throughout all of it, and that is that the amount of available power is insufficient to meet the needs of the preference customers so that somebody is going to have to provide additional power, and a fair means must be devised for allocating that power between the preference customers.

The original basis used in the 1958–59 allocations of loads, adjusted for generation, has been abandoned and now the latest studies, those of February 20, are based on applications.

I think it puts a premium on an honest application to use that type of basis. As Senator Curtis has indicated, our troubles would have been largely solved if we had applied for 2 or 3 times as much power as we actually needed in the hope that when it was cut in half we would still be happy.

We have not proceeded on that basis in Nebraska. We have made honest applications, and I think from the indications so far we are being penalized because of it.

The consistent result of the proposals that have been advanced so far, regardless of which basis they are on, seems to be that it penalizes the preference customer who has proceeded to provide power resources of its own before Bureau power was available in order to assure that its customers had adequate power supply rather than wait

for Bureau power and jeopardize that power supply when you so waited.

It seems that the maximum amounts of power are being given to those preference customers who make the least effort to help themselves.

Conversely, the less amounts are being given to those preference customers who have attempted to protect their own power supply.

Those of us who are building powerplants—Consumers has the Sheldon Station underway at the present time, which will include a nuclear reactor along with the conventional facilities, the power facilities built by the Nebraska Public Power System, by the Omaha Public Power District, and other preference customers in Nebraska—those facilities are not built with generally cheaper money than other preference customers throughout the basin have available to them. I think possibly in some respects the converse is true. We are proceeding with those plants not because we enjoy building powerplants, not because we have some extra cheap money that we want to use. We have done it as a matter of protection to our customers.

It seems that these allocations of power by the Bureau are not defensible as an equitable distribution when it gives certain preference customers roughly in the neighborhood of 75 percent of their total load requirements and others less than one-third of that amount, or less than 25 percent.

In Nebraska, by 1965, I estimate roughly that if the deficiency of Bureau power over what we feel we are rightfully entitled to out of the power that is being allocated, that deficiency is going to cost Nebraska somewhere around $750,000 a year and will continue as long as that deficiency exists.

I was happy to hear Governor Aandahl indicate this morning that he recognizes the value of integration. It is not clear to me the extent to which the Bureau or the Department of the Interior are willing to proceed on it. I think in the Missouri River Basin we have a wonderful assets in the hydroelectric properties, the transmission grid built by the Federal Government, the plants and transmission built by the other public agencies, and likewise the plants and transmission that has been put there by the private power companies.

It just seems to me to not make the greatest use of these facilities is unthinkable, and is in effect taking something away from that whole area that is rightfully theirs, and from the economic standpoint should and must be used.

The Department of the Interior and the Bureau of Reclamation have a very key part in that and to the extent that these integration plans can proceed is in a large measure dependent on the enthusiasm that the Bureau of Reclamation have for them.

As I understand, the progress that has been made in the Pacific Northwest at Bonneville has shown remarkable results in the way of savings to all concerned. I hope that the same thing can apply to the Missouri River Basin.

We do feel that the suggested allotments that have been developed by the Bureau unfairly and perhaps illegally discriminate against the preference customers in Nebraska.

As you can see, we are very unhappy about it.

Thank you very much.

Mr. STONG. I take it you agree that the very best answer to this is to firm up enough power to meet everyone's needs. Is that correct?

Mr. SCHACHT. I think that is the minimum that should be done.

Mr. STONG. What you have said is that the Bureau of Reclamation has a key role in coordinating and integrating the thermal and hydro that is available there in order to meet those needs.

Mr. SCHACHT. Yes; that is right. Even if the different power agencies in the basin might agree among themselves, as they have been attempting to work out some arrangements through Mr. DeBoer—he has some capacity to sell and the co-ops up in the Dakotas are anxious to buy it—it requires the facilities of the Bureau of Reclamation as the between agency to get the power from Nebraska to Dakota.

However, when unrealistic policies seem to block that, I think those policies should be changed so that it can be accomplished.

Mr. STONG. Thank you, Mr. Schacht.

Mr. SCHACHT. Thank you very much.

Mr. STONG. I understand that Mr. Venable does not want to appear.

Mr. VENABLE. That is correct.

Mr. STONG. Mr. DeBoer, do you want to make any additional statement?

Mr. DEBOER. I don't believe so, sir.

Mr. STONG. Mr. Charles A. Robinson, Jr., of the National Rural Electric Cooperative Association is the next witness.

STATEMENT OF CHARLES A. ROBINSON, JR., STAFF ENGINEER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Mr. ROBINSON. Thank you, sir.

Mr. Chairman, gentlemen of the committee, my name is Charles A. Robinson, Jr. I am the staff engineer of the National Rural Electric Cooperative Association, the national service organization representing over 90 percent of all REA financed rural electric systems in the United States.

RURAL ELECTRIFICATION IN THE MISSOURI BASIN

The rural electric systems in the Missouri Basin States, especially in North and South Dakota, have an immediate direct, and substantial interest in the marketing of Federal hydroelectric power from the various units of the Missouri River Basin project.

Rural electrification in the Dakotas is relatively new because prior to the time when at least the potential availability of low-cost river power became a reality, REA found it financially infeasible to electrify this thinly settled area.

As late as 1950, when the percentage of farms electrified nationally had climbed to 86.3 percent, North Dakota still lagged at 55.6 percent and South Dakota had achieved only 60 percent electrification.

One hundred and thirty-nine rural electric systems in the Dakotas, Nebraska, Montana, Minnesota, and Iowa, now depend upon the main-stem Missouri River reservoirs for all or a portion of their wholesale power supply. Twenty-six additional systems in Minnesota and Iowa, have been promised allocation of Missouri River power as soon as it becomes available.

The loads of all of these systems are growing rapidly and with sufficient Federal power in sight to meet growth for only a few years, the long-range planning necessary to successful local power system operation is extremely difficult if not impossible.

It would be physically possible for some of these rural electric systems to build REA-financed steam electric stations to meet future load, but the financial advisability of such action is very questionable. As long as there exists the prospect and promise of additional low-cost Missouri River hydroelectric power on the horizon, investment in steam electric stations, which may stand idle much of the time, cannot be risked.

Moreover, the rural electric systems hesitate to risk premature obsolescence of relatively small, high-cost steam electric stations in an area which possesses large fossil fuel reserves located close to high voltage transmission facilities; factors which point to a very large-scale lignite burning plant as desirable for the present and indispensable for the future.

It is this dilemma of how to secure abundant power at lowest cost to meet anticipated load growth that causes the rural electric systems to so actively interest themselves in the affairs of the Missouri River Basin project.

NATION'S BIGGEST RESOURCE UTILIZATION PROGRAM

The Missouri River Basin project is the largest single land and water utilization program ever undertaken by the United States. Its completion is estimated to take another 67 years and to cost more than $5.8 billion, compared to the $823 million estimated cost of the Central Valley project of California, and the $1.66 billion estimated cost of the Colorado River storage project.

The existing electric power generation and transmission system of the Missouri River Basin project embraces seven States and, when ultimately joined to the Colorado River storage project, through the Colorado-Big Thompson project, will constitute a Federal resource development stretching from the Mississippi River to beyond the Colorado River and virtually from the Canadian border to Mexico.

The Missouri Basin project will provide full irrigation water for 3.1 million acres of land and supplemental water for an additional 676,300 acres. Its powerplants will develop 2.44 million kilowatts.

A major portion of project development to date has been concerned with the construction of the six big main stream Missouri River multiple-purpose reservoirs. Four are virtually complete. These are:

	Kilowatts
Fort Peck	165,000
Garrison	400,000
Fort Randall	320,000
Gavins Point	100,000

Oahe Reservoir, 585,000 kilowatts, is in an advanced stage of construction, and Big Bend, 480,000 kilowatts, has been recently placed under construction, or should have been. Last year Congress appropriated funds to place Big Bend under construction. It is my understanding, however, that Budget Bureau policy has prevented construction from actually being started up to this time.

A major transmission system has been constructed to interconnect these multiple-purpose dams, and to bring Missouri River power to distribution points in Iowa, Nebraska, Minnesota, Montana, North Dakota, and South Dakota. That system is being constantly strengthened, though at a rather insufficient rate.

UNRESOLVED PROBLEMS OF RESOURCE MANAGEMENT

The unprecedented magnitude and complexity of the Missouri River Basin project has created major problems of the multiple-purpose resource management, many of which remain unsolved. These problems arise not only from the physical magnitude of the project, but from built-in conflicting characteristics caused, in this case, by combining irrigation and hydroelectric power features with navigation features, the latter requiring substantial releases of stored water during periods when such releases are not necessarily coincident with the best interests of hydroelectric power generation.

A realistic appraisal of the results thus far achieved toward reaching a solution of these problems is not encouraging.

In 1953, the Bureau of Reclamation was allocating $344 million or 31 percent of the total cost of the main stem Missouri River multiple-purpose reservoirs to power, and $769 million or 69 percent of the total cost to power and 25 percent to flood control and navigation.

This change represents a 100 percent increase in that portion of main stem project cost allocated to power. It is equivalent to adding 0.7 mills to the apparent cost of every kilowatt-hour that will be produced from these plants during the next 70 years.

There has, however, been no correlative change in the priority of use of Missouri River water. The production of firm power at these reservoirs is still subservient to the release of water for navigation purposes. So, although for cost allocation purposes, power is now a principal project purpose, it is, for water utilization purposes, an incidental purpose.

Examining the Missouri River Basin project as a whole, including the main-stem reservoirs and all the other features as well, 68.3 percent of project cost, representing $4 billion, is classified as reimbursable cost represented by investment in power, irrigation, recreation, and municipal water facilities.

Of project cost, 31.7 percent, representing $1.85 billion, is classified as nonreimbursable largely representing investment in flood control and navigation facilities.

Of the total reimbursable cost of $4 billion, the power users will repay $3.56 billion or 89 percent. The water users will repay only $408 million, 15 percent of that portion of project cost allocated to irrigation and 10 percent of total reimbursable costs.

Despite this major financial burden that has been imposed on the power features of the project, it has been nonetheless implied and argued that commercial power is an incidental purpose and that its beneficiaries bear the full hardship of adverse streamflow conditions as they have existed for the past several years.

The National Rural Electric Cooperative Association has consistently supported the contention that commercial power is an incidental feature of multiple-purpose projects. We have long argued for project evaluation and cost allocation procedures based on this contention.

But here, where the electric power features of the main-stem plants bear the burden of a cost allocation higher than all other features combined, and where power must repay 89 percent of all project reimbursable costs, the argument that power is incidental is absurd. With respect to the main-stem Missouri River reservoirs, power is not incidental. It is an indispensable feature.

It may be that the original concept of the Missouri River Basin project contemplated power as incidental; and it may be that if project cost allocations are reevaluated in the future, power may again become incidental. But, inasmuch as the Bureau of Reclamation and Corps of Engineers have financially loaded the power features so heavily, these agencies cannot in good conscience now be heard to say that power is merely an incidental purpose and, as such, should bear the full burden of low streamflow conditions.

In view of the fact that the future of the Missouri River Basin project, especially the irrigation features, depends so heavily upon a progressive and successful power marketing program, it is interesting to examine the results achieved by the Bureau's power marketing program to date.

These results are set forth in two Bureau of Reclamation studies entitled, "Economic Analysis—Missouri River Basin Project, April 1955," and "Economic Analysis—Missouri River Basin Project, December 1958."

According to these studies, the Bureau of Reclamation was, in 1955, anticipating that all revenues received through fiscal 1958 from the sale of Missouri Basin project power would total $114.73 million. Actual receipts totaled only $88.39 million, 23 percent below the anticipated revenues upon which it must be presumed project payout schedules are based.

The Bureau was similarly, in 1955, anticipating that its sale of firm power from the Missouri River Basin project would total 14.61 billion kilowatt-hours through 1958, whereas actual sales totaled only 12.18 billion kilowatt-hours, 17 percent below the estimate.

In like fashion the sale of Missouri River Basin nonfirm power fell 37 percent below the estimates for the same period, 6.37 billion kilowatts sold compared to 10.03 billion estimated.

These figures, which disclose lower than estimated power sales revenue over a substantial period of time are of serious consequence to the rural electric systems which depend upon the Bureau of Reclamation for wholesale power supply.

The cooperatives would rather see evidence of project revenue being ahead of schedule than behind because financial success is a key criteria to which the Congress looks in appropriating funds for further project construction and in authorizing new projects.

These figures constitute, moreover, a disappointing omen for the irrigation features of the entire Missouri Basin project in view of the tremendous financial burden that has been placed upon the revenue bearing power facilities in financing land reclamation.

THE UNDERLYING CAUSES

This failure of Missouri River Basin power revenue to meet anticipated schedules is in our opinion, traceable to at least three causes.

First, streamflow on the main stem of the Missouri has been subnormal for the last several years. Total natural runoff from the

Missouri Basin above Sioux City in calendar 1958 was expected to amount to 16.4 million acre-feet, some 5 million acre-feet less than the 1957 runoff, and 8½ million acre-feet less than normal runoff.

In a documentary entitled, "Appendix B Summary Report, Operation of Missouri River Main Stem Reservoirs 1958–59," by R. J. Pafford, Jr., Chief, Reservoir Control Center, U.S. Army Engineer Division, Missouri River, October 15, 1958, Mr. Pafford outlines the fact that the main-stem Missouri River Reservoir system was on a "rationing" basis during the 1958 season of high water use demand. In his report, Mr. Pafford states:

> An 8-month season (navigation) from late March to late November is highly desirable; but shortening of the season is preferable to any reduction in these flow rates. Curtailment of the commercial navigation season to less than about 6 to 7 months, however, would be expected to severely reduce commercial navigation on the Missouri River during any years of such curtailment.

Here is strong implication that a curtailment of the navigation season to 6 months would not irreparably reduce commercial navigation on that river. Mr. Pafford adds:

> Power requires that heads and discharges at the four operating main-stem plants be maintained in such a manner as to obtain maximum marketable power generation consistent with the other primary functions of the reservoirs.

This is a clear implication that hydroelectric power generation is limited and determined by the need for navigation water releases—although it bears over twice the cost allocation of navigation and flood control combined. Mr. Pafford states in his report:

> The Gavins Point and Fort Randall summer release pattern will be continued until late October to maintain satisfactory flows for navigation until November 1, at Omaha, November 5, at Kansas City, and November 8, at the mouth of the Missouri River. This will result in a 7-month commercial season in 1958.

From this report and in view of the fact that 61 percent of the cost of the main-stem Missouri River reservoirs is allocated to power, and only 25 percent to flood control and navigation combined, it appears that substantial reevaluation is in order as to the comparative degree to which the navigation beneficiaries of the reservoirs and the power beneficiaries are to forego their benefits during years of low streamflow.

A second factor which has slowed the development of Missouri Basin power sales is Budget Bureau recommendations of slow down, stretch out, and no new starts with respect to multiple-purpose project construction.

This policy is, of course, not limited to the Missouri River Basin system but because of the size of the latter its results are clearly apparent.

After outlining 1958 and 1959 Federal water resource program, the President, in his message accompanying the Federal budget for the fiscal year 1960, stated with respect to natural resources:

> In view of this record program, no funds are provided in the 1960 budget for starting construction of new water resources projects. Further, the budget contemplates stretching out construction on some projects underway where this can be done without stopping work on the project. Other programs will be continued at or below current levels * * *.
>
> In the years after 1960, an amount of $5 billion will be required to complete going projects and annual expenditures in 1961 and 1962 will be even higher than in 1960. In view of this extremely high level of commitments and

expenditures, the budget contemplates that in some cases work on new starts for which appropriations were made in 1959, be limited in that year largely to preconstruction activities including land acquisition. No additional funds are requested to start new projects in 1960.

Thus, the President, is saying in his current budget message that even funds appropriated by the Congress last year to begin new projects, will not be spent. This morning Secretary Aandahl testified that he had been forced in the delay of construction of the Big Bend project to reduce the amount of power which he had previously thought would be available for Missouri River Basin customers in the future.

In his message accompanying the budget for fiscal 1959, the President stated with respect to natural resources:

This budget contemplates curtailing some programs and stretching out construction on certain public works projects where this can be done without impairing the value of investments previously made * * *.

The construction activities of the Corps of Engineers and the Bureau of Reclamation for flood control, navigation, irrigation, water supply, and power projects will be limited in 1959 to orderly continuation of work started in prior years.

This "stretchout" scheduling of multiple-purpose project construction is per se expensive and in addition, delays the accrual of revenue from the reimbursable portions of such projects.

A third major factor contributing to the failure of the Missouri River Basin project to meet its payout schedule is, in our opinion, the general conservative power marketing policies of the Department of the Interior which, in particular, disclaim utility responsibility, severely limit the purchase of steam-generated energy for firming purposes, and apply restrictive criteria to the negotiation of contracts for the exchange of power over Federal transmission facilities between customers of the Government.

These are policies which our organization has criticized since their inception in 1954. They are policies concerning which our dissatisfaction is no secret.

SOME SUGGESTED REMEDIAL ACTION

Resource management criteria: The Department of the Interior must, in formulating policies and practices for the management of the Missouri River Basin project, take into account not only physical factors, such as water supply, but must also recognize the ambitions, aspirations, and reactions of the people of the basin States.

The Missouri River Basin project is more than an irrigation scheme. It is more than a navigable waterway, and more than a means of generating electric power. The project is a major economic force influencing the population of seven States.

It must, therefore, be directed in a manner acceptable to these people who are its stakeholders and who will pay 70 percent of the project costs.

In managing the Missouri River Basin project, the Bureau of Reclamation is analogous to a corporate board of directors. The Bureau is vested with full administrative control of the project, but this control must be exercised in a trustee capacity for it is the people in the States who are entitled to the benefits and to all the benefits available from the fullest development of this resource.

The only criteria for operation of the Missouri River Basin project must be the maximum use of the entire resource for the benefit of the basin people. Any tendency toward the imposition of policy and criteria arbitrarily chosen to reflect the particular social, economic, or political beliefs of individuals temporarily vested with the trustee administration of the project must be discarded.

A UTILITY RESPONSIBILITY IN FACT

In 1953, the Bureau of Reclamation published its historic "Marketing Criteria for the Missouri River Basin Project." Paragraph 1 of the criteria for the eastern division stated:

> • • • in the application of this criteria, it must be recognized that the Federal Government does not assume a "utility" responsibility, and therefore, the purchase of thermal generated energy to firm hydro as indicated, will be kept to a minimum.

Thus, although the Bureau of Reclamation has doubled that portion of mainstem Missouri River Reservoir cost allocated to hydroelectric power, and has imposed upon power features the burden of paying 89 percent of the reimbursable costs of the total Missouri River Basin project, it has somewhat inconsistently, we believe, sought to evade its overall responsibility in the power marketing activity and has rejected the concept of purchasing maximum economical quantities of thermal energy for firming purposes.

It is indeed difficult to deny in policy what is true in fact. The electric transmission system operated by the Bureau's Missouri River Basin project is the first and only seven-State backbone transmission system in that part of the country.

Many thousands of persons depend upon the Bureau's system for electric light and power. Many power distributing agencies have come to completely rely on Bureau power for 100 of their wholesale power supply requirements. These electric cooperatives and municipalities which so depend on the Bureau of Reclamation, are in large measure prevented from constructing steam-electric-generating facilities by the economic realities inherent in the promise of additional firm power from the Bureau's system.

These facts certainly constitute strong evidence that the Bureau of Reclamation owes a large measure of "utility responsibility" to at least those customers it now supplies, and perhaps to those to whom it has promised supplies of power in the future.

The legal concept of "utility responsibility" is one that is probably not voluntarily assumed by any business enterprise. Most businesses would like to pick and choose to whom and under what conditions service is offered. However, the concept of "utility responsibility" by which a particular organization is required to serve all consumers within its service area has been imposed upon many businesses deemed "affected with the public interest."

Certainly, the power marketing activities of the Bureau of Reclamation affect the public interest of a very large segment of population in the area served by it. And, whereas, we do not suggest that there rests upon the Bureau a "utility responsibility" to serve all electric distribution agencies in its service area, we do contend that where the Bureau has undertaken service to a particular distributor and holds forth the promise of additional firm power in the future, and where

the Bureau has imposed upon its customers the obligation of paying 89 percent of the total reimbursable costs of the entire Missouri River Basin project, under these circumstances, the Bureau should enthusiastically promote whatever activities are required to meet the demand for Federal power in its service area—including support for expeditious construction of all power producing units authorized as part of the Missouri River Basin project; and the purchasing of maximum economic quantities of steam energy for firming purposes. No revenue can accrue from uncompleted projects and no customers can be served with power from them. The term "minimum" has no place in a progressive resource development program.

STEAMPLANTS—FEDERAL AND NONFEDERAL

Several decades at least must pass before the Missouri River Basin project is completed. By that time, the firm power needs of the basin States will exceed the capability of all units of the entire Missouri River Basin project.

At that time the hydroelectric capability of the Bureau will be most advantageously useful as peaking capacity. The baseload of the area must depend on steam—either nuclear fuel or the large lignite fuel reserves of the Dakotas and Montana.

Appearing before this committee on May 3, 1957, I suggested the possibility of expanding the Bureau of Reclamation's Missouri River power system to include one or more large-size lignite fueled steam-generating stations.

At that time, I pointed out that competent studies indicated that steam-generated electric energy could be produced in a plant of from 150,000 kilowatts to 400,000 kilowatts capacity at from 3.32 to 5.04 mills based on private financing and full Federal income taxes. The cost for a Federal plant would, of course, be substantially less.

It may be useless to suggest that the Bureau undertake the construction of a steamplant at this time. It seems most desirable, however, that the Bureau of Reclamation, as part of its stewardship over the basin States' resources, should undertake rather detailed studies as to how best such a plant can be constructed and utilized in conjunction with the ultimate planned development of the basin's hydroelectric resources.

These plans can be carried into effect if and when the Bureau recommends that Congress authorize a Federal steam plant; or they can be used to help non-Federal groups in formulating their plans for meeting future power requirement.

RECONCILIATION OF COST ALLOCATIONS WITH ACTUAL PRACTICE

With respect to the main stem Missouri reservoirs, there is, in our opinion, considerable need for a reconciliation between cost allocations and payout schedules on one hand with the use of their facilities on the other.

In other words, if 61 percent of the cost of these projects is allocated to power, as is the case now, then there seems little reason for the generation of hydroelectric energy to exist as a purpose subservient to the need for releasing water for downstream navigation purposes.

If, by contrast, it is determined that the present system of reservoir operation should continue and that downstream navigation is in reality the principal purpose to be served, then the generation of power should be considered as an incidental purpose and its cost allocation and pay-out burden accordingly adjusted downward.

TRANSMISSION AGREEMENTS

Excess capacity in the Bureau's transmission system should be made available to Bureau power customers on a realistic basis for exchange between such customers of non-Federal power. There is certainly no objection to the Bureau charging a full reasonable wheeling or transmission fee for the use of its facilities proportionate to the transmission service performed. In those cases, however, where an exchange of power between Bureau customers is achieved by the Bureau withdrawing Federal power from one customer and reassigning it to the other for specified periods of time, no actual transmission service is performed and a full wheeling charge should not apply.

It has been traditional Bureau policy to negotiate contracts for the use of excess transmission capacity, Federal or non-Federal, on a basis which assumes that actual transmission service is rendered under all circumstances.

This is a policy based not upon the law of physics but upon a desire to achieve uniformity of contract. To the extent that any arbitrary criteria impedes maximum utilization of available electrical capability in an area where the Bureau controls transmission capacity, such criteria should be abandoned.

We, therefore, suggest that the time has come for a reappraisal of the Bureau's policy in governing charges for the use of the excess capacity in its transmission system.

PROJECT CONSTRUCTION SCHEDULES

In our opinion policies which disrupt planned, orderly development of new multiple purpose projects already authorized as part of an overall resource program like the Missouri River Basin project are wasteful. They disrupt plans developed at considerable public expense, jeopardize the project repayment schedules, destroy public confidence in the ability of the Federal Government to efficiently execute public works construction programs, and seriously reduce the feasibility of comprehensive resource development programs.

Policies involving stretched out or extended construction periods for public works projects already under construction are equally wasteful. Construction schedules which extend beyond minimum necessary time are costly and wasteful.

During the past year, in connection with public works appropriation legislation, we made a rather careful analysis of this problem, in the process of which we received two letters, one dated March 4, 1958, from Mr. Harvey McPhail, former Assistant Commissioner of Reclamation, and at present manager of the hydroelectric division of the Kuljian Corp., engineers and constructors of Philadelphia, Pa., and one dated April 3, 1958, from Mr. George K. Leonard, Chief Engineer

of the Tennessee Valley Authority. Mr. Leonard's letter reads in part as follows:

> Any consideration of a longer or extended time schedule must immediately recognize the costs that increase automatically with the length of the construction period, such as interest during construction, general and on-site management, engineering, accounting, clerical, and similar expenses. On a large project these items cost many thousands of dollars for each additional month.
>
> Under an extended time schedule there would be an almost irresistible tendency throughout the construction organization to relax the efforts toward economy and efficiency * * *. In our overall development and budget plans, we have never recommended an "extended time" schedule.

Mr. McPhail stated in his letter:

> In response to your letter of February 26, 1958, I have had occasion to examine the economics of multiple purpose construction as a function of the time consumed by such construction. In every instance, the studies indicated the economy of completing construction in as short a time as possible.

This is indeed significant language coming as it does from a man who developed many of the features of the Missouri River Basin project and initially supervised the marketing of power from it.

We are informed by the Corps of Engineers that expeditious construction schedules provide for completion of major multiple purpose construction items in a period of not to exceed from 5 to 7 years. This standard is sustained by recent experiences of the Power Authority of the State of New York.

When in 1954 the U.S. Supreme Court removed the last legal obstacle to the authority's clear right to construct the 1.8 million kilowatt St. Lawrence project, the authority promised that the first power would be on the line in a little over 4 years and that the project would be completed within 5.

This schedule has been met. St. Lawrence is a $600 million project and involved the construction of three separate dams and a powerplant.

The authority has now been granted a license to construct the 1.8 million kilowatt, $625 million Niagara project. Power from it is promised 3 years after initial construction begins.

The controversial Brownlee project of the Idaho Power Co. was placed under construction on November 15, 1956, and delivered power in September of 1958. It is a 360,000 kilowatt, $90 million reservoir project with a million acre-feet of storage capacity.

The 788,500 kilowatt, $100 million Priest Rapids project being constructed by the Public Utility District of Grant County was started on July 10, 1956, and is scheduled for completion on June 1, 1960. It is well ahead of schedule.

With these standards of economic construction schedules in mind, we tabulated, for a group of 20 Federal projects, the number of years during which they had been under construction. Our study indicated that the Garrison Reservoir in North Dakota, a part of the Missouri River Basin project had been under construction for 12 fiscal years and the Oahe project in South Dakota, another MRB reservoir, for 9 years.

The Corps of Engineers and Bureau of Reclamation are constantly faced with Budget Bureau criteria and appropriation situations requiring uneconomic rescheduling of construction activity.

POWER SYSTEM AVERAGE RATE AND REPAYMENT STUDY

Average Rates Used to Cover Revenue Deductions and Return Costs to be Borne by Power

MISSOURI RIVER BASIN PROJECT

(In Dollars, Except Sales of Electric Energy)

Based upon 3 percent Interest

Year of Study	Fiscal Year	Sales of Electric Energy (Thousands of Kilowatt-hours)				Sales of Peaking Capacity	Operating Revenues						Revenue Deductions					Adjustment	Net Revenue	Income De (Repayment c
		Irrigation Pumping	Firm Commercial	Non-firm	Total (Cols. 3,4,5)	(Megawatts)	Irrigation Pumping 2.5 Mills	Firm Commercial 5.5 Mills	Non-firm 3.3 Mills	Other Revenue	Peaking Capacity $15	Total (Cols. 8,9,10, 11,12)	Purchased Energy	Payments to Other Projects	All Other Electric Operation and Maintenance Expense	Provisions For Replacement (3% Sinking Fund)	Total (Cols. 14,15 16 and 17)			Interest 3%
Totals Through 1950		35,434	351,052	1,083,867	1,410,353	0	88,867	1,324,492	2,559,443	60,000	0	4,032,802	62,415	0	1,718,811	343,100	2,124,326	0	1,908,476	630,866
1	1951	10,899	214,471	132,202	357,602	|	38,903	1,031,736	330,504	12,423	|	1,403,546	8,955	0	635,978	115,039	759,972	(2,555)	647,019	163,969
2	52	14,061	247,916	327,664	589,641	|	55,153	1,303,079	843,286	37,623	|	8,371,956	8,349	0	995,985	288,107	1,288,381	(14,096)	1,133,499	448,075
3	53	83,370	951,354	307,648	1,182,396	|	448,804	5,231,873	891,793	290,368	|	6,404,964	397,834	2,033,340	1,944,342	433,324	4,808,840	(28,901)	1,567,823	691,761
4	54	73,826	1,038,599	396,278	1,506,083	0	103,008	6,387,684	1,141,804	591,783	0	8,801,218	312,303	4,070,899	2,873,676	569,395	7,886,273	(4,375)	970,564	1,340,639
Totals Through 1954		155,000	2,703,392	2,187,633	5,046,025	0	304,309	15,259,044	5,806,770	1,044,337	0	22,414,480	777,856	6,104,239	7,568,732	1,686,965	16,137,192	(49,907)	6,827,381	3,603,330
5	1955	1,800	2,390,900	1,185,000	3,577,100	0	3,000	13,149,950	3,910,500	500,000	0	17,563,450	214,000	4,086,255	3,765,500	715,178	8,780,933	45,113	8,887,630	2,508,202
6	56	2,000	2,977,100	1,654,100	4,633,200	|	5,000	16,374,050	5,458,530	300,000	|	22,137,580	400,000	4,304,175	4,818,800	1,443,200	10,955,575	0	11,188,005	6,913,147
7	57	2,800	3,269,600	2,360,300	5,632,700	|	7,000	17,982,800	7,788,990	100,000	|	25,878,790	500,000	4,503,665	6,460,800	1,551,900	13,015,765		12,863,025	9,835,538
8	58	3,600	3,273,700	2,640,400	5,917,700	Y	9,000	18,005,350	8,713,320	0	Y	26,727,670	500,000	4,546,588	7,283,300	1,580,000	13,909,888		12,817,782	10,821,272
9	59	4,400	3,695,400	2,969,200	6,669,000	0	11,000	20,104,700	8,148,360	0	0	28,264,060	500,000	4,599,518	7,713,800	1,645,800	14,473,918		13,790,148	10,810,598
10	60	5,100	4,078,000	3,232,300	7,315,400	104.2	12,750	22,489,000	10,666,590		1,963,000	34,671,340	500,000	4,969,252	8,052,800	1,752,200	14,870,252		19,801,108	12,100,557
11	1961	16,400	5,687,500	2,212,800	7,916,700	123.5	41,000	31,281,250	7,308,240		1,858,500	40,478,990	500,000	4,334,962	8,515,400	2,008,600	15,358,962		24,918,028	13,698,347
12	62	27,700	7,240,900	2,584,300	9,852,900	118.4	69,250	39,824,950	8,528,190		1,776,000	50,198,390	0	4,447,742	9,374,000	3,097,700	16,819,442		33,378,948	17,068,844
13	63	39,000	6,857,300	3,214,900	11,111,200	130.4	97,500	37,715,150	10,609,170		1,956,000	50,377,820		4,565,542	9,962,200	3,668,000	18,009,742		32,368,078	20,738,318
14	64	50,300	8,126,500	3,615,900	11,792,700	142.5	125,750	44,695,750	11,932,470		2,437,500	59,191,470		4,523,332	10,212,900	3,996,700	18,532,932		40,658,538	26,632,656
15	65	61,700	8,540,700	3,872,900	12,475,300	133.1	154,250	46,973,850	12,780,970		1,996,500	61,905,170			10,768,600	4,499,500	19,585,432		42,319,738	28,517,542
16	1966	86,500	8,604,700	3,894,400	12,585,600	136.7	216,250	47,325,850	12,719,520		1,900,500	62,162,120			11,178,300	4,848,700	20,350,332		41,811,788	29,876,584
17	67	111,300	8,682,000	3,820,300	12,553,600	123.8	278,250	47,421,000	12,606,990		1,857,000	62,163,240			11,241,500	4,867,900	20,432,732		41,730,508	29,020,697
18	68	136,100	8,616,800	3,779,700	12,534,600	124.3	340,250	47,403,400	12,473,010		1,864,500	62,081,160			11,274,500	4,911,000	20,508,832		41,572,328	28,640,807
19	69	166,900	8,614,600	3,765,300	12,546,800	177.8	408,250	47,380,300	12,425,490		2,667,000	62,875,040			11,326,100	4,989,100	20,638,532		42,236,508	28,826,287
20	70	185,900	8,931,700	3,804,200	12,927,800	123.9	464,750	49,157,350	12,553,860		1,858,500	64,034,460			11,610,800	5,308,700	21,246,852		42,787,608	29,344,316
21	1971	210,900	9,007,000	3,785,600	13,003,500	112.3	527,250	49,538,500	12,492,480		1,684,500	64,242,730			11,682,900	5,489,500	21,435,732		42,806,998	29,504,982
22	72	235,900	8,939,000	3,810,100	12,985,000	123.8	589,750	49,164,500	12,573,330		1,857,000	64,184,580							42,748,848	29,105,860
23	73	260,900	8,871,000	3,834,600	12,966,500	135.2	652,250	48,790,500	12,694,180		2,028,000	64,124,930							42,689,198	28,696,570
24	74	285,900	8,803,000	3,859,100	12,948,000	146.6	714,750	48,416,500	12,735,030		2,199,000	64,065,280							42,629,548	28,276,792
25	75	311,100	8,735,000	3,883,400	12,989,500	157.9	777,750	48,042,500	12,815,220		2,368,500	64,003,970							42,568,238	27,846,209
26	1976	340,600	8,667,000	3,907,100	12,914,700	169.2	851,500	47,668,500	12,803,430		2,538,000	63,951,430							42,515,698	27,404,548
27	77	370,100	8,599,000	3,930,800	12,899,900	180.6	925,250	47,294,500	12,971,640		2,709,000	63,900,390							42,464,658	26,951,213
28	78	399,600	8,531,000	3,954,500	12,885,100	191.4	999,000	46,920,500	13,049,850		2,871,000	63,840,350							42,404,618	26,485,810
29	79	429,100	8,463,000	3,978,200	12,870,300	203.3	1,072,750	46,546,500	13,128,060		3,049,500	63,796,810							42,361,078	26,008,246
30	80	458,700	8,395,000	4,001,800	12,855,500	214.6	1,146,750	46,172,500	13,205,940		3,219,000	63,744,190							42,308,458	25,517,661
31	1981	475,800	8,327,000	4,034,800	12,837,000	226.0	1,188,000	45,798,500	13,314,840		3,390,000	63,691,340							42,255,608	25,013,937
32	82	491,700	8,259,000	4,067,800	12,818,500	237.4	1,229,250	45,424,500	13,423,740		3,561,000	63,638,490							42,202,758	24,496,687
33	83	508,800	8,191,000	4,100,800	12,800,000	248.7	1,270,500	45,050,500	13,532,640		3,730,500	63,584,140							42,148,408	23,965,505
34	84	524,700	8,123,000	4,133,800	12,781,500	260.1	1,311,750	44,676,500	13,641,540		3,901,500	63,531,290							42,095,558	23,420,018
35	85	541,800	8,055,000	4,166,800	12,763,000	271.4	1,353,000	44,302,500	13,750,440		4,071,000	63,476,940							42,041,208	22,859,751
36	1986	557,700	7,987,000	4,201,600	12,746,300	282.7	1,394,250	43,928,500	13,865,280		4,240,500	63,428,530							41,992,798	22,284,308
37	87	574,800	7,919,000	4,236,500	12,729,700	294.1	1,435,500	43,554,500	13,980,450		4,411,500	63,381,950							41,946,218	21,693,053
38	88	590,700	7,851,000	4,271,300	12,713,000	305.4	1,476,750	43,180,500	14,095,290		4,581,000	63,333,540							41,897,808	21,085,458
39	89	607,800	7,783,000	4,306,200	12,696,400	316.8	1,518,000	42,806,500	14,210,460		4,752,000	63,286,960							41,851,228	20,461,087
40	90	623,900	7,715,000	4,340,800	12,679,700	328.2	1,559,750	42,432,500	14,326,640		4,923,000	63,239,890							41,804,158	19,819,383
41	1991	634,300	7,647,000	4,379,900	12,661,200	339.5	1,585,750	42,058,500	14,453,670		5,092,500	63,190,420							41,754,688	19,159,840
42	92	644,700	7,579,000	4,419,000	12,642,700	350.9	1,611,750	41,684,500	14,580,700		5,263,500	63,142,450							41,706,718	18,481,995
43	93	655,100	7,511,000	4,458,100	12,624,200	362.2	1,637,750	41,310,500	14,711,730		5,433,000	63,098,980							41,657,848	17,785,253
44	94	665,500	7,443,000	4,497,200	12,605,700	373.5	1,663,750	40,936,500	14,840,760		5,602,500	63,043,510							41,607,778	17,069,093
45	95	675,900	7,375,000	4,536,300	12,587,200	384.9	1,689,750	40,562,500	14,969,790		5,773,500	62,995,540							41,559,808	16,332,932
46	1996	686,300	7,307,000	4,573,600	12,566,900	396.2	1,715,750	40,188,500	15,098,880		5,943,000	62,940,130							41,504,398	15,576,126
47	97	696,700	7,239,000	4,610,800	12,546,500	407.6	1,741,750	39,814,500	15,215,640		6,114,000	62,885,890							41,450,158	14,798,278
48	98	707,100	7,171,000	4,648,100	12,526,200	419.0	1,767,750	39,440,500	15,338,730		6,285,000	62,831,980							41,396,248	13,998,782
49	99	717,500	7,103,000	4,685,300	12,505,800	430.3	1,793,750	39,066,500	15,461,490		6,454,500	62,776,240							41,340,508	13,176,796
50	2000	728,800	7,035,000	4,722,300	12,486,100	441.7	1,820,500	38,692,500	15,583,590		6,625,500	62,722,090							41,286,358	12,331,885
51	2001	738,400	6,967,000	4,375,100	12,300,500	453.0	1,846,000	38,318,500	15,097,830		6,795,000	62,107,330							40,671,598	11,463,850
52	02	748,600	6,899,000	4,427,900	12,115,500	464.4	1,871,500	37,944,500	14,612,070		6,966,000	61,494,070							40,058,338	10,587,000
53	03	818,800	6,831,000	4,281,700	11,931,500	475.7	2,047,000	37,570,500	14,129,610		7,135,500	60,882,610							39,446,878	9,708,860
54	04	849,000	6,763,000	4,128,800	11,740,800	487.0	2,122,500	37,196,500	13,625,040		7,305,000	60,249,040							38,813,308	8,810,539
55	05	879,800	6,695,000	4,018,300	11,597,500	498.4	2,198,000	36,822,500	13,260,390		7,476,000	59,756,890							38,321,158	7,910,496
56	2006	895,000	6,627,000	3,892,300	11,414,300	509.8	2,237,500	36,448,500	12,844,590		7,647,000	59,177,590							37,741,858	6,998,135
57	07	910,800	6,559,000	3,761,400	11,231,200	521.1	2,277,000	36,074,500	12,412,620		7,816,500	58,580,680							37,144,888	6,075,821
58	08	926,600	6,491,000	3,630,400	11,048,000	532.5	2,316,500	35,700,500	11,980,320		7,987,500	57,984,820							36,549,088	5,143,731
59	09	942,400	6,423,000	3,499,500	10,864,900	543.8	2,356,000	35,326,500	11,548,350		8,157,000	57,387,850							35,952,118	4,201,591
60	10	958,500	6,366,000	3,357,200	10,681,700	553.4	2,396,250	35,013,000	11,078,760		8,301,000	56,789,010							35,353,878	3,249,076
61	2011	|	|	|	|	|	|	|	|	|	|								2,895,949
62	12	|	|	|	|	|	|	|	|	|	|								1,893,930
63	13	|	|	|	|	|	|	|	|	|	|								272,149
64	14	|	|	|	|	|	|	|	|	|	|								0
65	15	|	|	|	|	|	|	|	|	|	|								
66	2016	|	|	|	|	|	|	|	|	|	|								
67	17	|	|	|	|	|	|	|	|	|	|								
68	18	|	|	|	|	|	|	|	|	|	|								
69	19	|	|	|	|	|	|	|	|	|	|								
70	2020	958,500	6,366,000	3,357,200	10,681,700	553.4	2,396,250	35,013,000	11,078,760	0	8,301,000	56,789,010	0	4,343,332	11,682,900	5,489,500	21,435,732	0	35,353,278	0
70 Year Totals		34,973,000	474,109,792	249,734,433	758,815,225	20,333.2	87,344,389	2,602,454,244	822,711,210	1,044,337	304,998,000	3,819,498,180	3,891,256	898,433,836	735,269,232	324,019,543	1,355,613,867	(4,794)	2,463,873,459	1,046,193,422
117 Year Totals		80,080,500	773,311,792	407,582,833	1,260,855,125	46,343.0	199,968,079	4,848,105,844	1,343,418,930	1,044,337	695,145,000	6,488,575,590	3,891,256	495,630,440	1,284,365,532	579,206,043	2,363,093,271	(4,794)	4,125,477,525	1,046,193,422

SUMMARY OF ALLOCATION AND REPAYMENT OF COSTS

Item	Cost Allocation	Probable Repayment
Total Cost in Payout Study	5,312,096,000*	
Reimbursable	3,459,511,000	3,459,511,000
Irrigation	2,235,749,000	393,538,000
Commercial Power	1,144,238,000	3,066,405,000
Municipal Water	7,600,000	7,600,000
Fish and Wildlife	342,000	
Recreation	16,037,000	
Investigations	55,567,000	
Reserve for Future Power System Additions	(56,978,000)	
Non-reimbursable	1,852,585,000	
Flood Control and Navigation	1,849,576,000	
Fish and Wildlife	1,950,000	
Municipal Water (Rapid City Air Base)	1,037,000	

*Includes interest during construction of $53,814,000 on power, $426,000 on municipal water.

TABLE VI

Income Deductions (Repayment of Investment)		Investment Repayment From Power Revenues (Plant in Service at End of Year)				Allowable Unpaid Balance		Earned Surplus (Cumulative)	Fiscal Year	Year of Study
		Interest Bearing		Non-Interest Bearing						
Interest 3%	Principal	Commercial Electric Plant	Balance to be Repaid	Irrigation Plant	Balance to be Repaid	Commercial Electric Plant	Irrigation Plant			
630,866	1,277,610	6,743,905	5,466,295			6,743,905		0	Totals Through 1950	
163,989	483,030	15,649,795	13,869,155			15,649,795			1951	1
416,075	717,484	30,870,093	28,392,089			30,870,093			52	2
891,761	716,062	54,548,806	51,354,680			54,548,806			53	3
1,340,639	(970,075)	86,230,789	83,606,738			86,230,789		0	54	4
3,603,330	2,684,051	86,230,789	83,606,738			86,230,789		0	Totals Through 1954	
2,508,802	6,379,436	239,441,700	230,438,281			239,441,700		0	1955	5
6,913,147	4,868,858	341,123,600	327,851,263			341,123,600			56	6
9,895,538	3,027,487	377,008,900	360,709,076			377,008,900			57	7
10,821,272	1,996,510	378,649,400	360,353,066			378,649,400			58	8
10,810,592	2,979,595	424,627,800	403,351,910			424,627,800			59	9
12,100,597	7,700,551	489,388,000	456,411,559			489,388,000			60	10
13,698,347	11,285,681	609,163,600	568,961,478			609,163,600			1961	11
17,068,844	16,250,104	747,789,500	691,277,274			747,789,500			62	12
20,738,318	11,649,760	955,837,200	887,755,214			955,837,200			63	13
26,632,656	14,025,882	1,038,692,600	950,584,738			1,038,692,600			64	14
28,517,542	13,808,196	1,071,794,200	975,884,136			1,071,794,200			65	15
29,276,524	12,535,264	1,075,801,900	967,356,572			1,075,801,900			1966	16
29,020,697	12,709,811	1,075,848,700	954,693,561			1,075,848,700			67	17
28,640,807	12,931,521	1,094,962,900	960,876,840			1,094,962,900			68	18
28,826,287	13,410,221	1,132,307,400	984,810,519			1,132,307,400			69	19
29,544,316	13,243,312	1,144,237,600	983,497,407			1,144,237,600			70	20
29,504,988	13,302,076		970,195,331						1971	21
29,105,860	13,642,988		956,552,343						72	22
28,696,570	13,992,688		942,559,715						73	23
28,276,791	14,352,757		928,206,958						74	24
27,846,209	14,722,089		913,484,989						75	25
27,404,548	15,111,150		898,373,779						1976	26
26,951,213	15,513,445		882,860,334						77	27
26,485,810	15,918,806		866,941,528						78	28
26,008,246	16,352,832		850,588,694						79	29
25,517,661	16,790,797		833,797,897						80	30
25,013,937	17,241,671		816,556,226						1981	31
24,496,687	17,706,071		798,850,155						82	32
23,965,505	18,182,903		780,667,252						83	33
23,420,018	18,675,340		761,991,712						84	34
22,859,751	19,181,457		742,810,255						85	35
22,284,308	19,708,490		723,101,765						1986	36
21,693,053	20,253,165		702,848,600						87	37
21,085,458	20,812,350		682,036,250						88	38
20,461,087	21,390,141		660,646,109						89	39
19,819,383	21,984,775		638,661,334						90	40
19,159,840	22,594,848		616,066,486						1991	41
18,481,995	23,224,723		592,841,763						92	42
17,785,253	23,871,995		568,969,768						93	43
17,069,093	24,538,685		544,431,083						94	44
16,332,932	25,226,076		519,204,207						95	45
15,576,126	25,928,272		493,275,935						1996	46
14,798,278	26,651,880		466,624,055						97	47
13,998,782	27,397,526		439,226,529						98	48
13,176,794	28,163,712		411,062,817						99	49
12,331,889	28,950,473		382,108,344	1,922,167,000	1,922,167,000	1,144,237,600	1,922,167,000		2000	50
11,463,850	29,208,348		352,899,996			1,137,493,695			2001	51
10,577,000	29,471,338		323,428,658			1,118,357,960			02	52
9,708,860	29,744,018		293,684,640			1,112,252,330			03	53
8,810,539	30,002,769		263,681,871			1,092,466,802			04	54
7,910,496	30,410,702		233,271,169			1,058,005,811			05	55
6,998,135	30,743,783		202,527,446			904,795,900			2006	56
6,075,823	31,069,065		171,458,381			803,114,000			07	57
5,143,751	31,405,337		140,053,044			767,228,700			08	58
4,201,591	31,750,587		108,302,517			766,588,200			09	59
3,249,076	32,104,202		76,198,315			719,609,800			10	60
2,285,949	33,067,329		43,130,986			658,849,600			2011	61
1,293,930	34,059,348		9,071,638	1,922,167,000		535,074,000			12	62
272,149	9,071,638		0	1,896,157,509		396,508,100			13	63
0	0			1,860,804,231		188,400,400			14	64
				1,825,450,953		111,545,000			15	65
				1,790,097,675		72,443,400			2016	66
				1,754,744,397		62,435,700			17	67
				1,719,391,119		58,388,900			18	68
				1,684,037,841		49,874,700			19	69
0	0	1,144,237,600	0	1,922,167,000	1,648,684,563	11,930,800	1,922,167,000	0	20	70
1,046,193,422	1,144,237,600	1,144,237,600	0	1,922,167,000	1,648,684,563	0	1,922,167,000	0	Totals 70 Years	
1,046,193,422	1,144,237,600	1,144,237,600	0	1,922,167,000	0	0	0	12,349,903	Totals 117 Years	

NOTES

Columns 1-7. Annual sales by classes were taken from Bureau accounting records through FY 1954. Total annual sales by classes after FY 1954 are based on integrated operation of the power system to meet the power requirements of the Missouri River Basin region. Basic data for determining firm and non-firm sales on Bureau of Reclamation powerplants were obtained from the report Power Requirements and Supply, Missouri River Region, prepared by the Subcommittee on Electric Power, MRBAC, May 1953, excepting Clarks Fork Division powerplants on which basic data from more recent and detailed hydrologic studies were available. Output determinations for Corps of Engineer powerplants were furnished by that agency and are based on main-stem reservoir hydrology studies.

Columns 8-13. Revenues through FY 1954 are from Bureau accounting records. Thereafter, assumed average returns by classes of power and energy are as follows:

Firm commercial	3.5 Mills per Kilowatt-hour
Non-firm commercial	3.3 Mills per Kilowatt-hour
Irrigation pumping	2.5 Mills per Kilowatt-hour
Excess capacity for peaking	$15 per Kilowatt

Columns 14-21. Data through FY 1954 were taken from Bureau accounting records. Wheeling estimates are included in Column 16. Revenue deductions after FY 1954 are based on PF-8, Control Schedules, budget estimates through FY 1961, and ultimate revenue deductions were estimated as follows:

Powerplant	Ultimate Nameplate Capacity (Thousand KW)	Operation, Maintenance and Overhead (Thousand $)	Provision for Replacement (Thousand $)
1. Absaroka	90.0	131.8	188.4
2. Angostura	1.2	6.3	2.4
3. Bald Ridge	23.0	58.9	89.5
4. Big Bend	120.0	390.8	76.0
5. Boysen	15.0	74.4	31.7
6. Canyon Ferry	50.0	130.7	49.6
7. Davis Creek No. I	2.6	28.9	4.0
8. Davis Creek No. II	11.0	53.3	9.9
9. Fort Peck	165.0	391.6	134.0
10. Fort Randall	320.0	439.8	200.0
11. Fremont Canyon	48.0	110.0	47.5
12. Garrison	400.0	460.0	199.0
13. Gavins Point	100.0	325.0	91.0
14. Glendo	24.0	70.0	51.8
15. Hunter Mountain	14.4	49.2	23.5
16. Kemil	1.6	8.0	3.8
17. Kortes	36.0	112.0	48.5
18. Lees Park	6.1	40.8	8.4
19. Lillian	4.4	42.9	10.3
20. Little Porcupine	18.0	60.6	39.6
21. Lyon	24.0	73.0	54.0
22. Moorhead	8.0	31.3	21.2
23. Oahe	425.0	575.0	216.0
24. Pony Hills	180.0	112.3	178.6
25. Portage	20.0	73.0	56.5
26. Sunlight	14.9	34.5	27.8
27. Thief Creek	125.8	240.8	133.8
28. Tiber	2.0	8.0	5.5
29. Tongue River	25.0	81.4	45.1
30. Yellowtail	200.0	413.1	158.9
Total	2,434.4	4,631.4	2,661.1
Transmission		7,051.5	3,366.4
Total System		11,682.9	5,429.5

Financial data through FY 1954 are based on actual accounting records with respect to total revenues and revenue deductions other than replacements; replacements are based on actual plant in service for preceding fiscal years; interest is computed on balances to be repaid part of commercial electric plant as recomputed using electric plant investment, including allocation of multipurpose plant. The accounting records in FY 1955 will be adjusted to agree with these recomputations.

Columns 23-26. Investment in commercial electric plant was taken from Bureau accounting records through FY 1954, and thereafter were scheduled consistent with installation dates estimated on construction programs. Of the total power investment 20 percent was transferred from commercial electric to irrigation electric plant, representing investment in electric plant installed to meet irrigation pump requirements.

Repayment of the commercial power investment, including interest during construction, is based on repayment with interest on the unpaid balance, and is accomplished within a 43-year period from the time the last power unit becomes revenue-producing. Irrigators and Conservancy Districts are estimated to return $358,138,000 on construction costs.

Prepared by: J.M.M. - J.D.M. Date: April 1955

Historical financial data certified correct:

Administrative Officer, Region 7

Administrative Officer, Region 6

Recommended:

Supervisor of Power, Region 7

Supervisor of Power, Region 6

Approved:

Regional Director, Denver

Regional Director, Billings

16483 O - 59 (Face p. 323) No. 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Year of Study	Fiscal Year	Sales of Electric Energy (Thousands of KWH)				Sales of Peaking Capacity	Operating Revenues								Revenue Deductions					Adjust
		Irrigation Pumping	Firm Commercial	Non-Firm	Total (Cols.3,4,5)	(Kilowatts)	Irrigation Pumping 2.5 Mills	Firm Commercial 5.5 Mills	Allowances and Discounts	Net Firm Commercial	Non-Firm Commercial 3.0 Mills	Other Revenues	Peaking Capacity ($15/KW)	Total (Cols.8,11,12, 13,14)	Purchased Energy	Payments to Integrated Projects	All Other Electric Operation and Maintenance Expense	Provision for Replacement	Total (Cols.16,17, 18,19)	
Totals Through	1950	33,434	351,052	1,023,867	1,410,353	0	88,867	•	•	1,324,492	2,559,443	60,000	0	4,032,802	62,415	0	1,716,811	343,100	2,124,326	0
1	1951	10,989	214,471	132,802	357,602		28,903			1,031,716	330,304	12,423		1,403,346	2,995	0	635,978	115,035	753,972	-2,2
2	52	14,061	247,516	327,664	589,241		35,153			1,303,079	946,101	67,623		8,371,996	2,349	0	995,985	226,107	1,224,361	-14,6
3	53	23,370	451,394	327,628	1,162,392		46,404			5,231,873	638,119	292,968		6,409,964	197,234	2,033,340	1,944,342	433,174	4,606,090	-28,5
4	54	71,886	1,038,569	396,276	1,506,083		103,002			6,367,864	1,130,603	581,783		8,801,212	312,303	4,070,899	3,429,876	551,612	7,364,690	-4,1
5	1955	13,039	1,535,046	621,704	2,169,609		32,779			6,660,406	1,715,894	847,646		11,464,055	509,408	3,993,835	3,897,786	830,967	8,681,996	-61,2
6	1956	18,787	2,089,683	645,675	2,954,255		46,853			12,395,784	2,371,803	766,795		14,583,175	942,786	4,640,456	3,993,721	1,064,791	10,641,696	-69,0
7	57	18,393	2,879,124	1,087,287	3,704,804		47,495			13,973,905	3,056,295	1,525,979		18,609,674	1,540,906	4,607,690	4,755,824	1,640,362	12,636,082	-157,1
8	58	27,342	3,175,079	1,686,260	4,889,681	0	69,625	17,104,674	916,589	16,186,273	4,717,670	410,373	0	21,303,943	1,862,583	5,077,549	5,514,715	1,532,389	13,407,236	578,4
Prior Year Adjustments												-62,088		-62,088	45,938	35,372	211,773	-589,217	-296,134	-234,0
Totals Through	1958	138,581	12,143,254	6,368,939	18,764,374	0	501,061	17,104,674	916,589	65,663,354	17,669,762	4,535,042	0	88,389,239	5,106,899	24,519,141	25,488,731	6,134,544	61,889,315	0
9	1959	24,600	4,065,900	1,338,500	5,483,000	0	61,000	28,362,450	2,032,990	80,329,500	3,997,500	400,000	0	84,788,000	697,900	5,311,170	5,836,600	1,580,040	13,395,310	0
10	1960	25,000	4,671,880	1,051,500	5,750,380	36,000	62,500	25,694,900	2,355,710	83,339,166	3,144,500	400,000	588,000	87,360,188	900,000	5,887,190	6,183,200	1,636,300	14,606,690	
11	1961	25,800	5,885,700	996,200	6,249,100	67,800	63,000	28,741,350	2,612,850	26,128,500	2,994,600	750,000	1,817,000	30,953,100	700,000	5,827,150	6,840,000	1,776,300	15,143,450	
12	62	25,900	5,696,900	1,867,000	7,609,800	66,000	64,750	31,338,950	2,864,888	29,166,188	5,661,000	900,000	1,080,000	36,813,876	700,000	5,799,900	6,999,000	2,019,600	15,478,520	
13	63	28,600	6,630,700	2,800,900	8,886,800	66,800	66,500	36,466,650	2,519,666	33,949,184	6,686,700	1,050,000	1,383,000	43,015,384	700,000	5,798,570	7,054,000	2,227,600	15,780,170	
14	64	27,000	7,416,300	2,062,300	9,527,600	156,300	67,500	40,800,650	2,810,954	37,981,696	6,946,500	1,200,000	2,898,500	47,750,596	700,000	5,787,500	7,253,000	2,606,600	16,357,100	
15	1965	27,300	8,437,500	2,976,700	11,443,500	320,100	68,250	46,406,250	3,806,850	43,800,000	8,936,100	1,350,000	4,801,500	58,955,850	700,000	5,761,000	7,839,600	3,057,800	17,373,420	
16	1966	28,000	8,470,900	2,879,400	11,378,300	347,000	70,000	46,589,950	3,810,942	43,371,008	8,630,800	1,300,000	5,805,000	59,784,806	0	5,772,110	8,604,300	3,420,000	17,796,410	
17	67	28,000	8,469,900	2,796,400	11,314,300	373,600	70,000	46,694,450	3,826,162	43,460,888	8,369,800	1,650,000	5,807,000	59,184,488		5,768,930	8,691,300	3,491,000	17,945,230	
18	68	28,300	8,469,100	2,760,900	11,258,300	372,700	70,750	46,980,050	3,810,290	43,351,798	8,082,700	1,800,000	5,930,500	59,165,742			8,894,300	3,636,400	18,255,630	
19	69	28,800	8,471,500	2,694,300	11,254,600	370,000	125,000	46,304,300	3,819,284	43,375,616	6,052,600	1,950,000	5,550,000	59,051,216			9,041,300	3,712,300	18,416,530	
20	1970	28,400	8,468,300	2,688,100	11,154,800	366,700	146,000	46,575,650	3,817,954	43,357,696	7,668,300	2,125,000	5,530,500	59,043,496			9,080,300	3,706,300	18,577,530	
21	1971	28,300	8,459,000	2,676,400	11,105,700	367,400	170,750	46,584,300	3,814,420	43,310,080	7,735,200	2,275,000	5,511,000	59,002,030			9,115,300	3,660,300	18,738,530	
22	72	75,600	8,459,000	2,516,900	11,051,500	365,300	189,000	46,584,300	3,814,420	43,310,080	7,590,700	2,425,000	5,479,500	58,994,280			9,213,300	3,934,300	18,910,530	
23	73	76,400	8,435,600	2,496,200	11,008,200	363,100	191,000	46,395,600	3,805,588	43,190,878	7,440,600	2,575,000	5,446,500	58,801,372			9,300,300	4,000,300	19,071,530	
24	74	69,800	8,379,100	2,581,300	10,969,800	363,400	173,500	46,089,050	3,184,050	42,900,998	7,363,900	2,725,000	5,431,000	58,814,398			9,307,300	4,082,300	19,236,530	
25	1975	100,700	8,371,000	2,450,500	10,922,800	362,300	251,750	46,040,500	4,105,508	41,855,000	7,351,500	2,900,000	5,438,500	57,792,750			9,474,300	4,156,300	19,393,530	
26	1976	107,900	8,334,900	2,446,200	10,889,000	361,000	269,750	45,841,950	4,167,450	41,674,500	7,336,600		5,427,000	57,609,850			9,561,300	4,230,300	19,554,930	
27	77	105,800	8,321,600	2,400,400	10,846,800	360,000	315,500	45,766,800	4,160,800	41,606,000	7,281,200		5,412,000	57,458,700						
28	78	140,600	8,313,500	2,346,200	10,800,300	350,900	371,500	45,784,850	4,136,750	41,648,100	7,036,600		5,383,500	57,221,100						
29	79	169,800	8,289,900	2,303,400	10,762,500	357,000	423,000	45,864,450	4,114,950	41,749,500	7,090,200		5,367,000	57,329,700						
30	1980	189,300	8,216,400	2,320,900	10,726,600	356,000	473,250	45,190,800	4,108,800	41,082,000	6,962,700		5,340,000	56,757,950						
31	1981	207,900	8,201,300	2,277,800	10,687,800	353,800	519,750	45,108,250	4,100,750	41,007,500	6,833,400		5,307,000	56,367,650						
32	82	226,600	8,190,900	2,221,900	10,639,000	350,600	566,500	45,050,150	4,095,650	40,954,500	6,664,500		5,259,000	56,144,500						
33	83	209,300	8,158,800	2,873,500	11,061,600	370,600	573,750	47,070,100	4,279,100	42,791,000	6,620,500		5,599,000	58,644,250			9,561,300	4,230,300	19,554,930	
34	84	253,300	8,386,100	2,235,500	11,015,100	365,000	633,750	46,093,550	4,863,050	42,630,500	6,706,500		5,475,000	58,305,750			9,571,300	4,244,200	19,578,430	
35	1985	264,600	8,391,900	2,886,000	11,062,500	354,400	661,500	47,255,450	4,895,930	42,959,500	6,676,000		5,316,000	58,315,000			10,082,900	4,450,200	20,236,030	
36	1986	273,300	8,368,000	2,800,800	11,037,700	350,700	686,750	47,091,000	4,881,000	42,810,000	6,600,600		5,260,500	58,259,850			10,084,900	4,463,200	20,271,030	
37	87	265,100	8,333,100	2,105,700	11,003,900	348,900	712,750	46,938,050	4,866,550	42,665,500	6,557,100		5,233,500	58,056,050			10,055,900	4,476,100	20,294,930	
38	88	295,000	8,324,100	2,160,900	10,960,000	347,000	737,500	46,778,550	4,858,050	42,580,500	6,468,700		5,205,000	57,845,700			10,077,900	4,490,300	20,331,130	
39	89	303,700	8,349,600	2,153,900	11,007,800	345,200	759,250	47,082,888	4,874,800	42,748,000	6,461,700		5,176,000	58,046,950			10,211,000	4,555,500	20,529,430	
40	1990	311,900	8,321,700	2,140,000	10,973,600	344,100	779,750	46,869,350	4,860,850	42,608,500	6,420,000		5,161,500	57,869,750			10,211,000	4,555,500	20,529,430	
41	1991	317,800	8,462,600	2,152,600	10,932,600	344,200	793,000	46,944,300	4,831,300	42,313,000	6,458,400		5,163,000	57,687,400			10,211,000	4,555,500	20,529,430	
42	92	323,800	8,440,800	2,137,600	10,901,600	343,500	808,000	46,494,400	4,800,400	42,204,000	6,442,800		5,154,500	57,549,300			10,211,000	4,555,500	20,529,430	
43	93	327,800	8,520,800	2,155,300	11,002,700	340,300	818,000	46,861,188	4,860,100	42,601,000	6,465,900		5,164,500	57,889,400			10,326,800	4,606,000	20,695,130	
44	94	334,600	8,499,100	2,128,300	10,962,000	340,400	836,500	46,745,050	4,849,550	42,495,500	6,364,900		5,106,000	57,722,900			10,326,800	4,606,000	20,695,130	
45	1995	346,400	8,476,300	2,108,100	10,930,800	340,600	866,000	46,619,650	4,838,150	42,381,500	6,324,300		5,109,000	57,580,800			10,326,800	4,606,000	20,695,130	
46	1996	368,000	8,450,300	2,077,000	10,889,300	341,600	905,000	46,476,650	4,825,150	42,251,500	6,231,000		5,104,000	57,411,500			10,326,800	4,609,700	20,698,830	
47	97	377,800	8,668,800	2,090,700	11,078,700	341,200	943,000	47,348,400	4,924,400	43,044,000	6,272,100		5,118,000	58,277,100			10,601,500	4,723,900	21,080,330	
48	98	395,200	8,494,900	2,150,100	11,040,200	342,200	988,000	46,721,950	4,847,450	42,478,500	6,450,300		5,133,000	57,945,800			10,601,500	4,723,900	21,088,330	
49	99	416,800	8,452,300	2,189,600	11,058,700	342,400	1,042,000	46,487,650	4,886,150	42,861,500	6,368,600		5,136,000	57,728,300			10,601,500	4,723,900	21,086,330	
50	2000	444,400	8,436,100	2,092,000	10,962,500	342,600	1,111,000	46,363,550	4,813,650	42,130,500	6,276,000		5,139,000	57,556,500			10,612,500	4,723,900	21,099,330	
51	2001	461,300	8,647,200	2,104,700	11,213,200	338,500	1,153,250	47,559,600	4,923,600	43,236,000	6,314,100		5,077,500	58,660,850			10,867,300	4,886,000	21,516,830	
52	02	481,000	8,557,900	2,121,500	11,160,000	340,500	1,202,500	47,066,850	4,878,750	42,787,500	6,364,500		5,107,500	58,258,500						
53	03	502,700	8,516,900	2,106,200	11,127,800	340,800	1,256,750	46,842,950	4,856,450	42,564,500	6,340,600		5,118,000	58,023,650						
54	04	524,400	8,461,400	2,099,900	11,085,700	341,900	1,311,000	46,537,700	4,830,780	42,307,000	6,899,700		5,128,500	57,946,200						
55	2005	548,400	8,376,300	2,126,300	11,053,200	342,200	1,371,000	46,080,650	4,189,150	41,891,500	6,379,500		5,133,000	57,675,000						
56	2006	574,700	8,329,300	2,106,400	11,010,400	343,400	1,436,750	45,811,150	4,164,650	41,646,500	6,319,800		5,151,000	57,453,450						
57	07	600,700	8,238,100	2,131,300	10,968,100	344,600	1,501,750	45,296,550	4,118,050	41,180,500	6,393,900		5,169,000	57,145,150						
58	08	627,700	8,209,880	2,098,300	10,935,880	345,700	1,569,250	45,153,900	4,104,900	41,049,000	6,894,900		5,185,500	56,998,650						
59	09	649,800	8,179,600	2,064,200	10,893,600	346,700	1,624,500	44,947,800	4,089,800	40,898,000	6,392,600		5,200,500	56,815,600						
60	2010	665,100	8,155,000	2,031,300	10,851,600	341,000	1,662,750	44,858,900	4,077,900	40,775,000	6,084,500		5,115,000	56,547,850						
61	2011	679,400	8,140,900	1,988,700	10,808,600	337,400	1,696,500	44,778,750	4,070,850	40,708,500	5,966,100		5,061,000	56,328,100						
62	12	694,100	8,126,100	1,943,400	10,765,600	333,900	1,735,250	44,693,550	4,063,050	40,630,500	5,837,700		4,858,500	55,961,950						
63	13	711,900	8,111,600	1,904,400	10,727,900	322,100	1,776,750	44,613,800	4,055,800	40,558,000	5,713,800		4,831,500	55,781,450						
64	14	730,300	8,097,000	1,862,100	10,689,400	316,400	1,825,750	44,533,580	4,048,500	40,485,000	5,586,300		4,776,000	55,573,050						
65	2015	750,600	8,082,500	1,813,300	10,646,300	306,200	1,876,500	44,453,750	4,041,850	40,412,500	5,459,600		4,593,000	55,321,600						
66	2016	769,400	8,065,800	1,767,800	10,603,000	304,800	1,923,500	44,361,900	4,032,900	40,329,000	5,303,400		4,572,000	55,087,900						
67	17	788,100	8,051,100	1,720,500	10,559,700	305,200	1,970,250	44,281,050	4,025,550	40,255,500	5,161,500		4,576,000	54,993,050						
68	18	808,600	8,036,300	1,671,400	10,516,300	294,300	2,021,500	44,199,650	4,018,150	40,181,500	5,014,800		4,414,500	54,531,700						
69	19	826,600	8,021,800	1,624,600	10,473,000	294,800	2,067,000	44,119,900	4,010,900	40,109,000	4,873,800		4,422,000	54,371,400						
70	2020	840,900	8,007,000	1,581,900	10,429,800	295,900	2,102,250	44,039,500	4,003,500	40,035,000	4,745,700		4,438,500	54,221,450						
71	2021	848,000	7,999,000	1,545,800	10,389,800	296,500	2,120,000	43,978,500	3,997,500	39,975,000	4,640,400		4,477,500	54,112,900						
72	22	848,500	7,983,000	1,508,300	10,339,800	299,000	2,121,250	43,908,300	3,991,500	39,915,000	4,504,900		4,465,000	54,026,150						
73	23	848,900	7,969,000	1,501,900	10,319,800	300,600	2,122,250	43,829,300	3,984,500	39,845,000	4,505,700		4,509,000	53,861,950						
74	24	849,300	7,957,000	1,473,500	10,279,800	302,300	2,123,250	43,763,500	3,978,500	39,785,000	4,420,500		4,434,500	53,763,250						
75	2025	849,500	7,946,000	1,443,300	10,238,800	303,900	2,123,750	43,703,000	3,973,000	39,730,000	4,329,900	2,900,000	4,330,500	53,642,150	0	5,768,930	10,867,300	4,886,000	21,516,830	0
75 Year Totals		85,514,821	594,051,394	146,769,859	726,336,074	21,164,100	63,706,331	2,997,379,684	259,356,389	2,797,518,374	439,121,162	177,510,042	317,463,500	3,785,319,409	9,764,399	410,456,681	686,520,731	292,811,984	1,399,553,795	0
147 Year Totals		86,678,821	1,126,163,394	250,687,459	1,462,589,674	43,044,900	216,616,331	6,143,995,684	545,414,389	5,648,078,374	730,073,962	386,310,042	645,673,500	7,647,554,809	9,764,399	885,387,641	1,468,966,331	644,603,984	2,948,722,355	0

SUMMARY OF ALLOCATION AND REPAYMENT OF COSTS

Item	Cost Allocation	Probable Repay
Total Cost in Payout Study	$5,848,363,000*	
Reimbursable	4,001,611,000	$4,001,611,000
Irrigation	2,726,539,000	407,707,000
Commercial Power	1,166,375,000	3,561,361,000
Municipal Water	32,543,000	32,543,000
Recreation	2,401,000	--
Investigations	73,673,000	--
Nonreimbursable	1,846,752,000	
Flood Control and Navigation	1,757,494,000	
Fish and Wildlife	70,413,000	
Recreation	9,865,000	
Municipal Water (Ellsworth Air Base)	1,000,000	

* Includes $66,419,000 Interest during construction

POWER SYSTEM AVERAGE RATE AND REPAYMENT STUDY — TABLE VI

Average Rates Used to Cover Revenue Deductions and Return Costs to be Borne by Power

MISSOURI RIVER BASIN PROJECT

(In Dollars Except for Sales of Electric Energy)

20	21	22	23	24	25	26	27	28	29	30	31	32	33
			Investment Repayment From Power Revenues							Allowable Unpaid Balance			
			Interest-Bearing Allocation to Commercial Electrical Plant				Interest-Free Aid to Irrigation Plant		Harvest Surplus (Cumulative)			Fiscal Year	Year of Study
	Adjustments	Net Revenue	Interest 3%	Principal	In Service At End of Year	Balance To Be Repaid	Required Aid	Balance To Be Repaid		Commercial Electric Plant	Irrigation Plant		
,124,586	0	1,908,476	630,866	1,277,610	6,743,905	5,466,295			0	6,743,905		Totals Through 1950	
753,972	-2,555	647,019	183,989	483,030	15,629,795	13,869,155			0	15,629,795		1951	1
,224,361	-14,076	1,133,499	416,075	717,424	30,870,093	28,392,029				30,870,093		52	2
,800,090	-26,901	1,567,973	851,761	716,212	54,548,806	51,354,530				54,548,806		53	3
,364,890	-4,375	831,947	1,540,636	-708,689	113,511,165	111,025,578				113,511,165		54	4
,621,996	-61,286	2,780,833	3,330,767	-549,934	207,969,586	200,033,933				801,969,586		1955	5
,641,696	-69,673	3,871,606	6,001,018	-2,129,412	340,031,954	340,225,713				340,031,954		1956	6
,638,062	-157,367	5,809,445	10,199,784	-4,390,339	333,744,806	358,305,378				353,744,806		57	7
,407,236	572,419	8,549,126	10,724,986	-2,175,860	391,242,285	396,580,114			0	391,242,285		1958	8
-296,134	-234,046		-1,422,129	1,422,129								Prior Year Adjustment	
,289,315	0	27,099,924	32,437,753	-5,337,829	391,242,285	386,580,114			0	391,242,285		Totals Through 1958	
,395,310	0	11,402,690	11,897,403	-494,713	394,742,400	400,574,942			0	394,742,400		1959	9
,066,690		13,479,498	12,047,248	1,432,250	447,564,000	451,936,292				447,564,000		1960	10
,143,480		15,809,810	13,558,089	2,251,581	494,164,000	496,282,711				494,164,000		1961	11
,478,580		21,335,358	14,868,481	6,446,877	538,398,000	534,069,834				538,398,000		62	12
,760,170		27,235,214	16,022,095	11,213,119	650,606,000	635,064,715				650,606,000		63	13
,397,100		31,393,496	19,051,941	12,341,555	800,172,000	772,289,160				800,172,000		64	14
,373,480		40,982,430	23,168,675	17,813,755	923,697,000	878,000,405				923,697,000		1965	15
,796,410		40,987,788	26,340,012	14,647,776	930,514,000	870,169,619				930,514,000		1966	16
,945,230		41,239,298	26,105,069	15,134,169	943,509,000	868,030,450				943,509,000		67	17
,255,630		40,850,112	26,040,914	14,809,198	950,247,000	899,959,252				950,247,000		68	18
,416,530		40,634,686	25,793,778	14,835,908	956,934,000	852,860,344				956,934,000		69	19
,577,530		40,465,966	25,555,810	14,910,156	963,721,000	843,687,188				963,721,000		1970	20
,738,530		40,263,500	25,310,616	14,952,884	970,459,000	835,472,304				970,459,000		1971	21
,910,530		40,043,750	25,064,169	14,979,581	977,196,000	827,229,723				977,196,000		72	22
,071,530		39,819,842	24,816,892	15,002,950	983,934,000	818,964,773				983,934,000		73	23
,232,530		39,581,862	24,568,943	15,012,919	990,671,000	810,688,854				990,671,000		74	24
,393,530		38,399,220	24,320,666	14,078,554	997,410,000	803,349,300				997,410,000		1975	25
,554,530		38,055,320	24,100,479	13,954,841		789,394,459						1976	26
		37,882,170	23,681,834	14,200,336		775,194,123						77	27
		37,706,570	23,255,824	14,450,746		760,743,376						78	28
		37,375,170	22,822,301	14,552,869		746,190,507						79	29
		37,203,420	22,385,715	14,817,705		731,372,802						1980	30
		37,013,120	21,941,184	15,071,936		716,300,866						1981	31
,554,530		36,789,970	21,489,086	15,300,944	997,410,000	700,999,922				997,410,000		82	32
		39,089,720	21,029,998	18,059,722	998,609,000	684,139,200				998,609,000		83	33
,578,430		38,767,320	20,524,176	18,243,144	1,073,072,000	740,399,056				1,073,072,000		84	34
,236,030		38,278,970	22,210,771	16,068,199	1,074,271,000	785,459,858				1,074,271,000		1985	35
,271,030		37,988,820	21,764,696	16,224,124	1,075,470,000	710,464,734				1,075,470,000		1986	36
,294,930		37,773,920	21,313,942	16,459,978	1,076,671,000	695,205,756				1,076,671,000		87	37
,333,130		37,514,570	20,856,173	16,658,397	1,098,018,000	699,894,359				1,098,018,000		88	38
,589,430		37,517,520	20,996,831	16,520,689	1,098,018,000	683,373,670				1,098,018,000		89	39
,589,430		37,340,320	20,501,210	16,839,110	1,098,018,000	666,534,560				1,098,018,000		1990	40
,589,430		37,097,970	19,996,037	17,101,933	1,098,018,000	649,432,627				1,098,018,000		1991	41
,589,430		36,979,870	19,482,979	17,496,891	1,116,430,000	650,347,736				1,116,430,000		92	42
,695,130		37,194,270	19,510,432	17,683,838	1,116,430,000	632,663,898				1,116,430,000		93	43
,695,130		37,027,770	18,979,917	18,047,853	1,116,430,000	614,616,045				1,116,430,000		94	44
,695,130		36,885,670	18,438,481	18,447,189	1,117,600,000	597,338,856				1,117,600,000		1995	45
,698,830		36,712,670	17,920,166	18,792,504	1,135,610,000	596,556,352				1,135,610,000		1996	46
,068,330		37,188,770	17,896,691	19,292,079	1,135,610,000	577,264,273				1,135,610,000		97	47
,068,330		36,857,470	17,317,928	19,539,542	1,135,610,000	557,724,731				1,135,610,000		98	48
,068,330		36,639,970	16,731,742	19,908,228	1,136,410,000	538,616,503				1,136,410,000		99	49
,099,330		36,457,170	16,138,495	20,318,675	1,166,375,000	518,282,828				1,159,631,095		2000	50
,516,230		37,164,620	16,448,485	20,716,135		527,566,693				1,150,745,805		2001	51
		36,845,770	15,827,001	21,018,769		506,547,924				1,135,504,907		02	52
		36,877,620	15,196,438	21,681,182		484,866,742				1,111,826,194		03	53
		36,429,970	14,546,002	21,883,968		462,982,774				1,058,863,835		04	54
		36,158,770	13,889,483	22,269,287		440,713,487				984,405,414		2005	55
		35,931,220	13,221,405	22,715,815		417,997,672				928,343,046		2006	56
		35,625,920	12,539,930	23,086,990		394,908,682				912,630,194		07	57
		35,402,420	11,847,860	23,635,560		371,273,122				775,132,715		08	58
		35,299,370	11,139,200	24,161,104		347,112,018				771,638,600		09	59
		35,031,020	10,413,371	24,617,649		322,494,709				718,811,000		2010	60
		34,811,870	9,674,841	25,137,029		297,357,680				672,211,000		2011	61
$4,001,611,000		34,445,720	8,920,730	25,524,990		271,832,690				627,971,000		12	62
407,707,000		34,865,220	8,154,961	26,110,259		245,722,431				515,769,000		13	63
1,961,361,000		34,096,820	7,373,674	26,685,146		219,037,305				366,803,000		14	64
38,543,000		33,705,370	6,571,119	27,134,251		191,903,054				242,678,000		2015	65
		33,511,670	5,757,098	27,754,578		164,148,476				235,861,000		2016	66
		33,349,020	4,924,454	28,424,566		135,723,910				222,866,000		17	67
		33,015,470	4,071,717	28,943,753		106,780,157				216,128,000		18	68
		32,855,570	3,203,405	29,652,165		77,127,992				209,391,000		19	69
		32,705,220	2,313,840	30,391,380		46,736,612				202,654,000		2020	70
		32,596,670	1,402,098	31,194,572		15,542,040	2,394,986,000	2,394,986,000		195,916,000	2,394,986,000	2021	71
		32,489,920	466,261	15,542,040		0		2,378,504,361		189,179,000		22	72
		32,365,720	0	0				2,346,138,661		182,441,000		23	73
		32,247,020	0	0				2,313,891,641		175,704,000		24	74
1,516,230	0	32,125,920	0	0	1,166,375,000	0	2,394,986,000	2,281,765,721	0	168,965,000	2,394,986,000	2025	75
9,553,795	0	2,385,765,614	1,106,170,335	1,166,375,000	1,166,375,000	0	2,394,986,000	2,281,765,721	0	168,965,000	2,394,986,000	75 Year Totals	
6,722,395	0	4,698,831,854	1,106,170,335	1,166,375,000	1,166,375,000	0	2,394,986,000	0	31,300,519	0	0	147 Year Totals	

Probable Repayment

NOTE

Columns 3-7 Annual sales by energy classes were taken from accounting records through FY 1958. Total annual sales thereafter by energy classes are based on integrated operations of the power system to meet the load characteristics of the Missouri River Basin area. Basic data for determining power generated at Bureau of Reclamation tributary powerplants were obtained from latest available hydrologic studies. Basic data on generation of power at mainstem powerplants of the Corps of Engineers were furnished by that agency and were based on latest available reservoir operation studies.

Columns 8-15 Operating revenues through FY 1958 are from accounting records. Thereafter, average annual gross revenues were based on the following rates for power and energy:

Firm Commercial	5.5 mills per Kwh
Non-Firm Commercial	3.0 mills per Kwh
Irrigation Pumping	2.5 mills per Kwh
Excess Capacity for Peaking	$1.5 per Kilowatt

In the determination of net firm commercial revenue (Column 11) account was taken of the reduction in gross revenues of 5.5 mills at the assumed average load factor, due to allowances and discounts (Column 9) in lieu of wheeling and for deliveries at transmission voltage. These allowances and discounts, based on current experience and projected customer contracts, amount to about 10 percent of gross revenue, or an assumed net firm commercial revenue of 5.12 mills through 1974 and 5.0 mills thereafter. Estimates of Other Revenues (Column 13) include wheeling revenue to be obtained by use of excess system transmission capacity by non-Federal systems, as well as current and future miscellaneous revenues other than from energy sales.

Columns 16-20 Data through FY 1958 on Bureau operations of its powerplants and transmission system were obtained from accounting records, to which were added data furnished by the Corps of Engineers on operations of the mainstem powerplants. Estimates for wheeling payments to non-Federal systems are included in Column 18. Through FY 1965, data for Bureau facilities are consistent with budget request. Under ultimate conditions, revenue deductions for system operations are estimated as follows, with estimates for mainstem facilities being furnished by the Corps of Engineers:

Powerplant	Ultimate Dependable Capacity (Megawatts)	Operation Maintenance and Wheeling (Thousand $)	Provision for Replacement (Thousand $)
1. Absaroka	50.0	$ 832.8	$ 138.1
2. Angostura	1.2	9.1	3.2
3. Big Bend	217.0	440.0	220.0
4. Boysen	15.0	185.7	35.0
5. Canyon Ferry	50.0	298.1	58.6
6. Clarks Fork Plants	477.5	677.9	897.1
7. Fort Peck	165.0	595.0	156.0
8. Fort Randall	320.0	660.0	320.0
9. Fremont Canyon	40.0	86.8	64.3
10. Garrison	400.0	432.0	292.0
11. Gavins Point	100.0	259.0	110.0
12. Glendo	24.0	132.3	41.6
13. Kortes	36.0	100.0	52.9
14. Lyon [illegible] 48.0		188.9	37.5
15. Oahe	595.0	485.0	431.0
16. Tongue River	25.0	142.4	67.4
17. Yellowtail	200.0	653.3	369.4
Total	2,941.7	$4,851.5	$3,371.1
Transmission		6,005.0	2,314.2
System Totals		$10,897.5	$5,685.3

Columns 23-29 Investment in powerplants and transmission systems operated by the Bureau of Reclamation allocated to commercial power was taken from Bureau accounting records through FY 1958, with investments in mainstem powerplants furnished by the Corps of Engineers. Investment after FY 1958 was scheduled consistent with installation dates estimated on the construction program. Of the total power investment, 22 percent was transferred to irrigation electric plant, representing investment in electric plants installed to meet irrigation pumping requirements.

Repayment of the commercial power investment, including interest during construction, is based on repayment with interest on the unpaid balance, and is accomplished within 47 years after 1975. Irrigators and Conservancy Districts are estimated to return $407,707,000 on construction costs allocated to irrigation.

Prepared by: J.M.W. - R.W.S. Date: December 1958

Historical financial data certified correct:

Administrative Officer, Region 7 — Administrative Officer, Region 6

Recommended:

Supervisor of Power, Region 7 — Supervisor of Power, Region 6

Approved:

Regional Director, Denver — Regional Director, Billings

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MRSP FY 1959

It is our suggestion that a careful appraisal of the procedures by which funds are appropriated and expended for construction of Federal multiple purpose projects can save many millions of dollars for the Federal Government, and assure beneficiaries of these projects that the navigation, flood control, irrigation, and power benefits will be available to them at predetermined times.

It would be very desirable for the Congress, when it appropriates initial construction funds for a particular project, to require that the Corps of Engineers or Bureau of Reclamation submit plans which specify the most economic construction schedule and the amount of funds required each year to maintain that schedule.

So that these planned schedules may be adhered to, the constructing agency should be allowed to carry over through successive years whatever funds cannot, for one reason or another, be used during the year for which they are appropriated.

While it is true that the Bureau of the Budget has imposed on the constructing agencies an uneconomic construction schedule by withholding appropriated funds in some instances, we believe there is a clear responsibility, and probably a desire, on the part of Congress to divest itself from responsibility for uneconomic practices upon those who invoke them.

Several serious unresolved problems of resource management are hindering efficient management of the Missouri River Basin project as evidenced by the failure of a project revenue to meet reimbursable cost payout schedules.

The following actions will, in our opinion, substantially correct present difficulties:

1. A reconciliation of project cost allocation and payout schedules with actual reservoir operation, especially during periods of low stream flow.

2. Establishment and retention of economic, expeditious construction schedules for multiple purpose units under construction and prompt commitments for new starts required to keep the MRB project in balance.

3. An extensive broadening of the Department of the Interior's water resource administrative policies, especially abandonment of the very limited interpretation of its role in developing the total resource constituted by the seven State MRB project.

Mr. STONG. Thank you, Mr. Robinson.

On page 5 of your prepared statement you refer to materials available in the 1955 and 1958 economic analysis, indicating that power revenues had not met anticipated revenues.

I wonder if, when you can, you will supply specific citations so that those tables may be included in the record of the hearing.

Mr. ROBINSON. Yes, sir. I will be happy to do that. I can supply them right now, if you wish.

Mr. STONG. Very well.

Mr. ROBINSON. The 1958 economic analysis is table No. 35.

The 1955 economic analysis is also table No. 35.

Mr. STONG. They will be included in the record.

For the assistance of the Senators, I might say that the summary report, "Operation of the Missouri River Mainstem Reservoirs,

1958–59," by R. J. Pafford, Jr., to which Mr. Robinson has referred, appears earlier in the record of this hearing in connection with the testimony of Mr. Forseth of North Dakota.

I think that is all.

Mr. ROBINSON. Thank you, Mr. Chairman.

Mr. STONG. Is there anyone else who wants to be heard?

If not, the hearing will be adjourned.

(Whereupon, at 3:25 p. m., the hearing in the above-entitled matter was recessed, to be reconvened subject to the call of the Chair.)

(Subsequent to the hearings, the chairman directed further inquiry into the possibility of meeting preference-customer requirements through integration of Federal hydroelectric capacity and Nebraska thermal generation. The following correspondence resulted:)

REPORT ON SUMMER POWER BY BUREAU OF RECLAMATION

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D.C., April 24, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs, U.S. Senate, Washington, D.C.

DEAR SENATOR MURRAY: As requested in your April 16 letter, we are enclosing data on the estimated availability of seasonal power and energy in the eastern area of the eastern division of the Missouri River Basin project.

We are pleased to furnish you this information.

Sincerely yours,

ALFRED R. GOLZÉ, *Acting Commissioner.*

Missouri River Basin project, eastern area, eastern division, capacity, adverse water year, available for seasonal use, April through September, on a firm basis [1]

[Thousands of kilowatts]

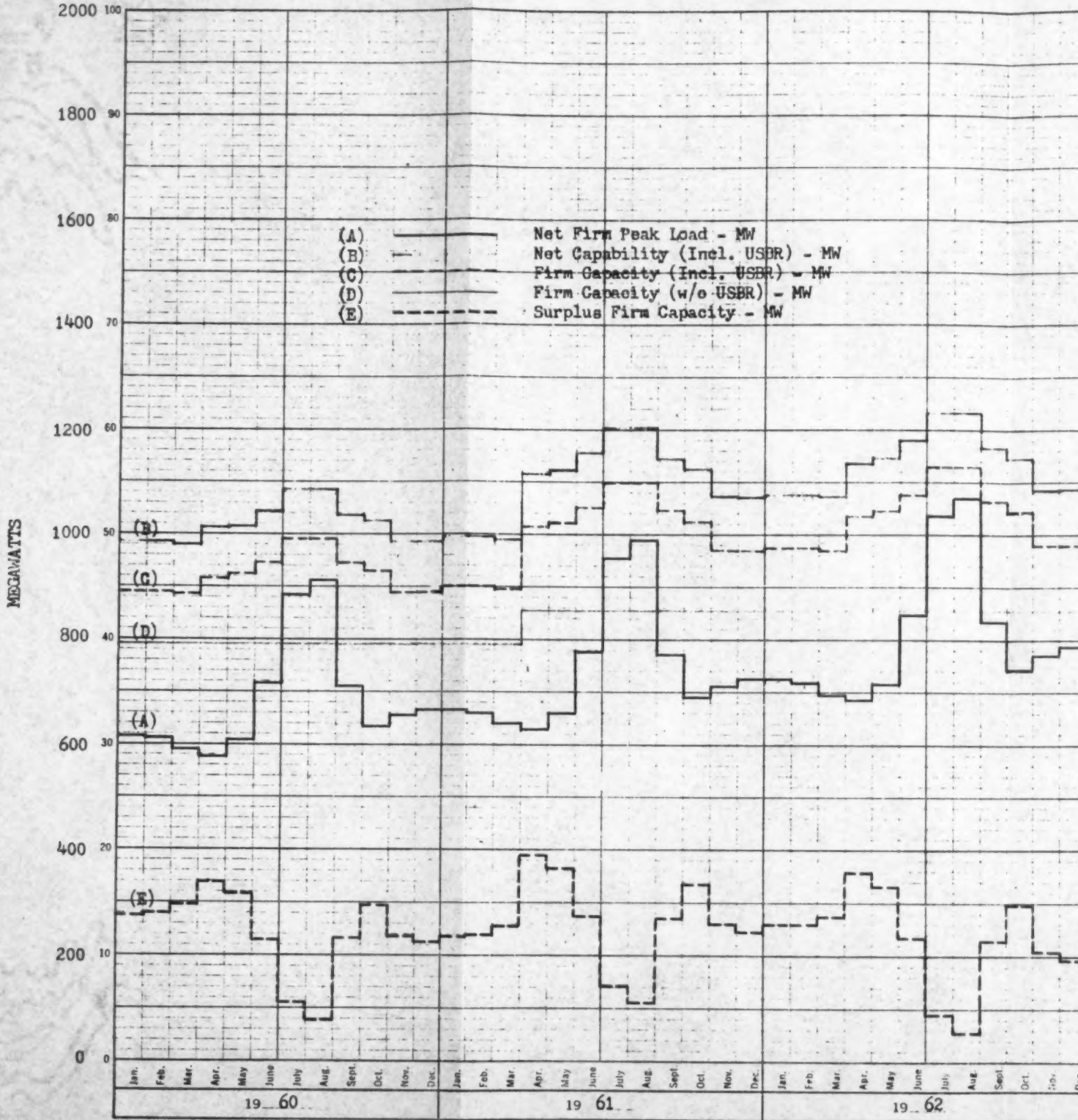
	Available	Existing commitments [2]	Reserved for annual peaking service	Balance available
1959	113	107.5		5.5
1960	166	133.5		32.5
1961	169	163.5		5.5
1962	125	159.5		−34.5
1963	135	159.5		−24.5
1964	341	159.5	158	23.5

[1] Based upon October 1958 data on projected river operations excluding Big Bend powerplant.
[2] Includes for 1959, 1960, and 1961, approximately 24 megawatts in negotiation status.

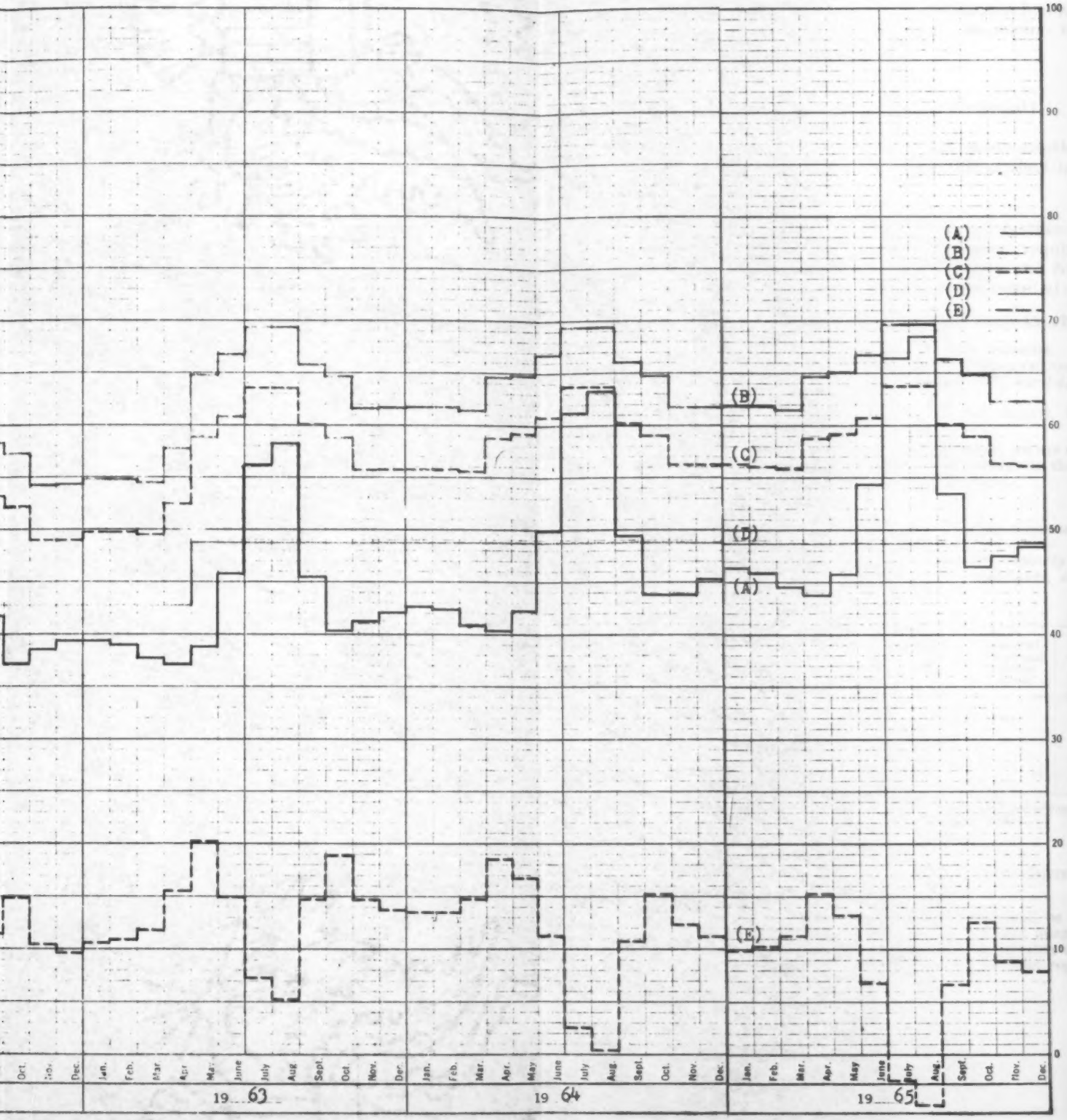
MISSOURI RIVER BASIN PROJECT, EASTERN AREA, EASTERN DIVISION, NONFIRM ENERGY AVAILABILITY

Additional supplies of energy classified as nonfirm energy will be available during the navigation season of average water years in varying quantities depending on annual water conditions. Since this energy generation cannot be firmly established in advance from year to year, it is sold as fuel replacement energy on an if, as, and when basis.

NEBRASKA PUBLIC POWER SYSTEM and OMAHA PUBLIC
Combined Load and Capacity Data
April 1, 1959



A PUBLIC POWER DISTRICT
city Data



REPORT ON SEASONAL EXCESS CAPACITY IN NEBRASKA SYSTEM

NEBRASKA PUBLIC POWER SYSTEM,
Columbus, Nebr., May 1, 1959.

Subject: Availability of surplus power in Nebraska.

Mr. BENTON J. STONG,
Professional Staff Member, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR MR. STONG: I have your letter of April 29, 1959, with attachment. In this letter you ask two questions with respect to the availability of surplus power in Nebraska.

In answer to your first question, I am enclosing a copy of an "Analysis of Surplus Firm Thermal Capacity—Nebraska Public Power System and Omaha Public Power District, 1960–65, Inclusive," dated April 28, 1959, with attached Nebraska Public Power System and Omaha Public Power District combined load and capacity data, April 1, 1959. I believe these data are largely self-explanatory and will serve to answer your question. Referring particularly to the year 1964, you will note that OPPD and NPPS, combined, will have surplus firm thermal generating capacity considerably in excess of 200,000 kilowatts available in every month of the year with the exception of the months of July and August. Even in the year 1965 when OPPD and NPPS will be short on a combined basis of meeting their load requirements with adequate reserves in the months of July and August, we have 180,000 kilowatts of thermal capacity available as a minimum in every month except the months of June, July, August, and September. By this time, of course, we will probably have made arrangements for some additional capacity to meet our July and August load requirements. Specifically, the answer to your question then is that we can see no reason why the surplus April-to-September power in the Bureau's system in 1964 cannot be matched by an equal amount of firm thermal capacity available in Nebraska so as to create an additional 170,000 kilowatts of marketable annual firm power.

Your second question is whether it would be possible for Nebraska to sell or trade the Bureau of Reclamation energy in the summer months, making delivery during offpeak hours of the night. The answer to this question is "yes." We can make large quantities of offpeak hour power available during the night hours and on weekends and holidays. An accurate determination of the probable amounts of such power available in 1964 would require a lengthy and tedious analysis of daily load patterns, but we have made sufficient investigation to advise you that Nebraska Public Power System alone on a conservative basis could supply a minimum of 1 million kilowatt-hours per day. While we have not checked with the Omaha Public Power District and we do not presume to speak for them, we are quite confident that the Omaha District in addition could supply 1 million kilowatt-hours per day, making a total available for Nebraska of not less than 2 million kilowatt-hours per day.

I hope this information will be of some help to you. If we can be of any further assistance, please do not hesitate to call on us.

Sincerely yours,

D. J. BEBOER.

ANALYSIS OF SURPLUS FIRM THERMAL CAPACITY, NEBRASKA PUBLIC POWER SYSTEM AND OMAHA PUBLIC POWER DISTRICT, 1960–65, INCLUSIVE

The attached curve sheets entitled "Nebraska Public Power System and Omaha Public Power District Combined Load and Capacity Data, April 1, 1959," have been prepared to show the estimated surplus firm thermal generating capacity available in the combined systems of the NPPS and OPPD for the years 1960 to 1965, inclusive.

The following is a brief description of the curves and their derivation.

Curve (A) represents the net firm peak load by months for the combined systems of NPPS and OPPD. This curve has been obtained by adding on a non-coincidental basis the estimated peak load requirements of the two systems as estimated independently by NPPS and OPPD. The coincidental peaks of the two systems will probably be somewhat less and this load curve is therefore on a conservative basis.

Curve (B) shows the net capability of the combined systems including in each case the currently committed or contracted for USBR power, both year-around firm and summer firm, plus the estimated year-around firm to be made available based on allocation study data released by the Bureau of Reclamation as of February 20, 1959. The total net capability is adjusted by months for pattern delivery requirements under the terms of the contracts with the Bureau.

Curve (C) represents the combined firm capacity of the OPPD and NPPS systems and is the same as curve (B) except that the combined reserve requirements of the two systems have been deducted. This curve represents the maximum combined load that the two systems can carry while maintaining the required reserves.

Curve (D) shows the firm capacity of the combined generating facilities of NPPS and OPPD without USBR power and after deducting required reserves. This curve shows the anticipated commercial operation of the Sheldon station of Consumers Public Power District on April 1, 1961, which will be a part of the NPPS generating capacity, and commercial operation of unit No. 4 in the North Omaha plant of the Omaha Public Power District on May 1, 1963.

Surve (E) is in effect the difference between curve (A), the net firm peak load requirement, and curve (C), the firm capacity available to meet such load. Curve (E), therefore, represents the surplus firm capacity available in the thermal generating units of NPPS and OPPD combined.

It will be noted from curve (A) that the peak load requirement of the two systems occurs in the months of July and August of each year and that these peaks are excessively high compared to the load requirements during the other months of the year. Correspondingly, the surplus firm thermal capacity is likewise at a minimum during the months of July and August, as shown by curve (E). These disproportionately high summer peak requirements are caused by normal hot weather load requirements in Nebraska, principally air-conditioning and irrigation pumping.

Curve (E) further shows that in August 1964 the surplus firm thermal capacity is reduced approximately to zero, while the corresponding surplus capacity available during the winter months is considerably in excess of 200 megawatts. Curve (E) further shows in 1965 that the surplus firm thermal capacity is a negative quantity in July and August, or stating it positively, the combined systems of NPPS and OPPD will be short approximately 95 megawatts of firm capacity to meet the anticipated loads during the month of August. This, then, indicates the need for an additional source of firm capacity at that time. It will be noted, however, that in the winter months of 1965, the surplus firm thermal capacity is still in the order of 200 megawatts.

Curve (E) further demonstrates the possibilities of an exchange of winter thermal capacity available in Nebraska with other agencies in the Missouri River Basin for summer capacity which they may have available and which Nebraska can use because of its high summer peak load requirements. The curve also illustrates quantitatively the amount of surplus thermal capacity that is available in Nebraska during the winter seasonal period and that could be utilized by the Bureau of Reclamation for the purpose of storing energy in the form of water behind the main stem dams and thereby increasing the total amount of year-around firm power available in the Bureau's marketing area.

For the sake of convenience, the estimated availability of surplus firm thermal capacity in Nebraska is tabulated below.

[In megawatts]

Seasonal service period	NPPS (1)	OPPD (2)	Combined (3)
October 1959 to March 1960, inclusive	103	165	268
October 1960 to March 1961, inclusive	80	141	221
October 1961 to March 1962, inclusive	127	115	242
October 1962 to March 1963, inclusive	104	89	193
October 1963 to March 1964, inclusive	84	174	258
October 1964 to March 1965, inclusive	55	132	187

NOTE.—Combined surplus firm thermal capacity availability, col. (3), is based on minimum (noncoincidental) capacity available during any month of the winter seasonal service period.

In addition to the surplus firm thermal capacity (with associated energy) which is available in Nebraska as indicated above, the two Nebraska systems could make available large quantities of offpeak energy (nights, weekends, and holidays) on a year-round basis which could further be utilized on an exchange basis to meet Nebraska's heavy summer peak demands and to further augment the total firm hydroenergy supply in the Missouri River Basin project.

MID-WEST ELECTRIC CONSUMERS ASSOCIATION,
Aberdeen, S. Dak., May 6, 1959.

Hon. JAMES E. MURRAY,
Chairman, Senate Committee on Interior and Insular Affairs,
Senate Office Building, Washington, D.C.

DEAR SENATOR MURRAY: The hearings conducted by your committee on Federal power-marketing problems have rendered a real service by making available to the public information that they have urgently needed to properly evaluate the problems of the preference customers and the policies of the Federal agencies.

On behalf of the preference customers in the Missouri Basin, I should like to analyze some of this information and call to the committee's attention other information which we have received since we testified on the 13th and 14th of February. For your information, I will enclose a copy of a letter addressed to Congressman George McGovern from J. L. Person, brigadier general, U.S. Army, who is the Assistant Chief of Engineers for Civil Works, and of an analysis of surplus firm thermal capacity prepared by the Nebraska Public Power System and the Omaha Public Power District.

In the Missouri Basin, responsibility for planning, constructing, and operating the Federal water development has been divided between two agencies—the Corps of Army Engineers and the Department of Interior. The corps has been given the responsibility for developing navigation and flood protection, and the Department of Interior for the development of irrigation and power.

This divided responsibility could conceivably function if both agencies were equally diligent in representing their interests. Unfortunately, this is not the case, to which the records of your committee hearings both this year and in 1957 eloquently testify.

First, we learn that the Department has capitulated completely to the corps in the matter of cost allocations. As cost allocations stand at the present, power has been allocated $1,140 million of the project cost and will repay $3,070 million. Power is allocated 21.3 percent of the total cost, irrigation 41.5 percent, and flood control and navigation 34.4 percent. Power will repay 88.6 percent of all the reimbursable costs and irrigation 7.2 percent. Flood control and navigation are completely nonreimbursable and will repay nothing.

The Department of the Interior failed in its responsibilities when it surrendered its point of view in the matter of cost allocations. Since that time the Department has compounded its previous failures by surrendering again in the matter of the allocations of benefits. Allocations of water to the various project purposes are, of course, tantamount to the allocation of benefits.

Many sources can be quoted to substantiate the position that Interior has surrendered its strong position in the questions having to do with the allocation of water. Its position was strong because of the O'Mahoney-Millikin amendment to the Flood Control Act, because of the urgent need for water in the upstream States, and certainly because it has so generously shouldered the responsibility for almost the entire repayment to the Federal Treasury.

To support the Department's surrender, we could quote the "Supplemental Report on Adequacy of Flows in the Missouri River"; year-by-year decisions of the Coordinating Committee for Main-Stem Operations, and many other actions and public documents. That is no longer necessary.

Assistant Secretary of Interior Aandahl made the extent of Interior's shameful surrender abundantly clear when he told the Interior Committee: "Our staff people join in conferences with the Army on water releases, but the Army, as the construction agency, has the primary responsibility for the overall plan for the releasing of water, and the relationship of the numerous benefits that are involved in these multipurpose projects—these dams that have been built by the Corps of Engineers—is primarily a responsibility of the corps."

With Department of Interior willing and acquiescent, the corps has naturally used its opportunity "for the releasing of water, and the relationship of the numerous benefits" to assign the maximum amount of water and the minimum amount of costs to the areas of its interest and responsibility.

Because the Department of Interior has been unwilling or unable to represent and defend its responsibilities and our interest, we have had to come to the Congress, and particularly to this committee, time and time again. We hope that out of those hearings you may develop legislation that will permanently correct the obvious and increasing inequities in the Missouri Basin.

Specifically, at this time we come to the Senate Interior Committee seeking relief from an immediate and critical power shortage that exists for the preference customers in the Missouri Basin. You listened with patience and understanding as spokesmen for cooperatives, municipal utilities and consumer power districts developed the nature of these shortages and the serious problems which they raise.

We are convinced that proper water management would eliminate these immediate problems. We are further convinced that the shortages could be eliminated and the Federal Treasury substantially benefited if the Department of Interior would properly manage the power available even under the existing and inequitable distribution of water.

During the course of the hearings, it became a matter of public record that the Nebraska Public Power System and the Omaha Public Utility District have available substantial amounts of winter firm power that they are willing to sell to the Department. Since March 5, these consumer-owned utilities have made comprehensive studies of the surplus capacities they have available. I enclose a copy of those studies.

Not only do the Nebraska utilities have 200,000 kilowatts of excess and firm winter capacities available, but they have large quantities of summer energy as well.

With water management that releases most of the basin's water during the summer months and with all of the basin States except Nebraska having winter power peaks that are substantially higher than the summer peaks, it is obvious that men of good will could quickly and easily integrate these surplus Nebraska capacities into the Bureau system to the benefit of all concerned. We think it inexcusable for the Department to sell its summer capacities as dump or secondary energy at bargain rates when there exists an urgent need for firm power and such a simple opportunity for firming.

For your information, I should like to call your attention to two items of information that have become available to the public recently. The power allocations which your committee has been deliberating included all of the main-stem plants except Big Bend and the Department proposes, from those plants with an installed capacity of approximately 1,600,000 kilowatts, to market approximately 1 million kilowatts of firm power.

On the 16th of February, a subcommittee of the Senate Committee on Public Works held a public hearing on Big Bend Dam in Pierre, S. Dak. At that time, Col. David G. Hammond, district engineer of the corps, from its Omaha office, explained the proposed dam and indicated it would have 480,000 kilowatts of installed capacity.

He said: "I would like to point out that the Big Bend powerplant will be used to meet peak loads, and that it will actually operate at full capacity for only a few hours each day." We do not quarrel with the proposal to install 480,000 kilowatts at Big Bend. We think it proper. However, we think it alarming that we are now constructing another large block of non-firm capacity without developing any policy for firming.

May I quote two sentences from General Person's letter to Congressman McGovern: "Power planning for the Missouri River plants also has been on the basis of integration of the hydrosystem power output with power from thermal plants." And later, in the same letter: "The Corps of Engineers is definitely interested in the integration of peaking power from the Missouri River hydroplants with thermal generation in the area, for full utilization of these hydroplants in providing most economical power service to the region."

We have then a hydrosystem that the planning and constructing agency says is designed for integration with thermal capacity. We have an immediate opportunity to begin that integration with the surplus Nebraska capacity. That step must be taken now and we must at the same time plan ahead as to how we are to firm the balance—"to provide the most economical power service to the region."

The preference customers have an urgent and immediate need for more firm power; the hydroplants have been designed for integration with thermal plants; surplus thermal capacity is available in Nebraska. All that remains is for men

of good will to work out the details and a great and good service will have been rendered.

When we appeared before the Interior Committee earlier, we urged that a slack-water navigation channel that conserves water be substituted for the wasteful free-flowing navigation channel under construction.

Since that time, the Missouri Basin Interagency Committee met in Council Bluffs, Iowa, on the 16th of April. At that time a resolution requesting a study of slack-water navigation was adopted. Significantly, either the Governor or his personal representative from all 10 of the basin States supported the resolution which had been introduced by Governor Loveless of Iowa.

We continue to hope that this study will be made to avoid a basic and growing conflict over water between the upper and lower basin.

May I thank you and your committee again for your sympathetic and helpful attention to our problems.

Sincerely yours,

KEN HOLUM, *Executive Director.*

HEADQUARTERS,
DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D.C., April 24, 1959.

Hon. GEORGE MCGOVERN,
House of Representatives.

DEAR MR. MCGOVERN: I am pleased to furnish you the information requested in your letter of March 24, 1959, concerning the Big Bend project and projects on the Missouri River.

My letter to you of April 20, 1959, advised you that the Chief of Engineers will modify the plans for the construction of the Big Bend Dam in accordance with the request from the Senate Subcommittee on Flood Control River and Harbors dated April 10, 1959.

The six Missouri River main stem projects have been planned for full integration of operations, both hydraulically and electrically, on a unified system basis. This will provide for maximum utilization of the river for all purposes and is particularly important with respect to developing maximum hydropower. Under this concept full advantage can be taken of the various advantages of each individual project site. Big Bend, with its relatively low cost per kilowatt of installed capacity can be used to build up the total system peaking capability which will be needed during the few hours a day when powerloads are highest. Other plants where installed power capacity is more expensive per kilowatt, can be used to supply more of the round-the-clock electrical energy which is needed to serve the loads during offpeak as well as peak load hours. Operation on a unified system basis, will develop more hydropower value at substantially less relative cost than would be possible for operation of the six projects as isolated individual units.

Power planning for the Missouri River plants also has been on the basis of integration of the hydrosystem power output with power from thermal generation plants. Powerloads in the area will exceed the hydro output substantially so that thermal generation will be needed. By teaming-up hydro with thermal generation, full advantage can be taken of certain favorable characteristics of each. For example the hydroplant kilowatts can be used to serve the peaks of the powerloads with less cost than by using more thermal plant capacity, and the thermal plants can be operated more efficiently without repetitive daily shutdowns of boilers and steam turbine units during offpeak hours.

The pattern of power loading of the individual plants will vary considerably between plants, and at various seasons of the year. Some plants will provide larger amounts of peaking capability, and some will provide more electrical energy, as they all work jointly to serve the interconnected system power loads. Hour-by-hour loadings of the various plants have not been worked out in detail for the various operating conditions anticipated. Instead power engineers use the so-called plant load factors as an index to the general manner of plant operation. The load factor is the ratio of average load on a powerplant to the peak load on the plant during a specified time period. Generally a high load factor, above about 50 percent, indicates around-the-clock plant operation, with highest plant loading at the time of the system's peak load and (except for very high load factor plants) reduced loading during the offpeak periods. Low

load factors, below about 35 percent, usually indicate operation of a plant at full capacity for only a few hours at the time customers loads are the highest, and very low or no loading of the powerplant for several hours a day.

For the Missouri River hydroplants the system load factor will be lowest during the winter season, and the Big Bend plant will operate at full capacity for only a few hours a day. The plant load factors under these conditions, for an average winter season in about 1965, are estimated as follows:

	Local factor, percent
Fort Peck	79.6
Garrison	41.1
Oahe	30.8
Big Bend	14.5
Fort Randall	34.5
Gavins Point	63.8
System	34.1

The firm hydropower capability of the Missouri River system, by itself, for carrying customer loads will be limited in the wintertime by the amount of energy which can be generated at the plants. The Bureau of Reclamation, as the designated Federal power marketing agency, has estimated the 1965 system firm power capability (measured at load, after allowing for transmission losses, and excluding the 15,000-kilowatt Fort Peck unit which is connected to the west) at 1,164,000 kilowatts. We do not have this figure broken down by individual plants. In addition, due to the additional generating capacity which is being installed specifically for this purpose, the Missouri River mainstem system will provide approximately 500,000 kilowatts of dependable peaking capacity. Although this peaking capacity in itself will not directly increase the firm hydropower available for sale to preferenced customers, its provision when integrated into the overall generation of the region will enable the power loads of the area to be met with a comparable reduction in thermal generating capacity which otherwise would need to be installed. This savings in thermal investment will reduce overall power generating costs in the region, and in the long run should benefit all the power customers.

The Corps of Engineers is definitely interested in the integration of peaking power from the Missouri River hydroplants with thermal generation in the area, for full utilization of these hydroplants in providing most economical power service to the region, however, it has neither plans nor congressional authority for construction of thermal generation plants. I agee that the huge lignite deposits in the area would seem to offer a good opportunity for future development of low-cost steam power.

The winter surplus of steam power in Nebraska also appears to afford an excellent opportunity, when integrated with the Missouri River hydro output, for more economical power service to the area. I understand that steps have already been taken in this direction through a contract between Nebraska Public Power System and East River Electric Power Cooperative.

Recently considerable attention has been devoted to the establishment of an Eastern Missouri Basin Power Pool. It appears that such a power pool might afford an effective mechanism for integration of power generation activities in the area, with substantial benefit to all concerned. This, however, is primarily a power marketing responsibility which has been assigned to the Bureau of Reclamation.

I want to assure you of the interest of the Corps of Engineers in the most effective use of the power from the Missouri River and shall be pleased to furnish you any additional information which you may desire.

Sincerely yours,

J. L. PERSON,
Brigadier General, USA,
Assistant Chief of Engineers for Civil Works.